

## PRACTICAL NO - 1

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

Steps for installing Ubuntu in a Virtual Machine.

Step I:-

Select a virtual Machine option disk file or a Physical Drive. to start Ubuntu in your virtual Machine.

Space Given to it is 1.86 GB.

Step II.

Select the Language of your choice and click on "Install Ubuntu".

You can also try Ubuntu for free on computer drive from this CD.

Step III .

for Updation and Add software click on the Normal Installation.

Step IV:

While configuring installation type we need to click Erase disk and Install Ubuntu. This step would delete all types of doc, photos, etc in all operating system.

ES<sub>16</sub>

Step III :-

In this you only need to choose the location for the work to be done on Ubuntu.

Step IV :-

In this type you need to choose username and password for the login in Ubuntu & then click on continue.

Step V :-

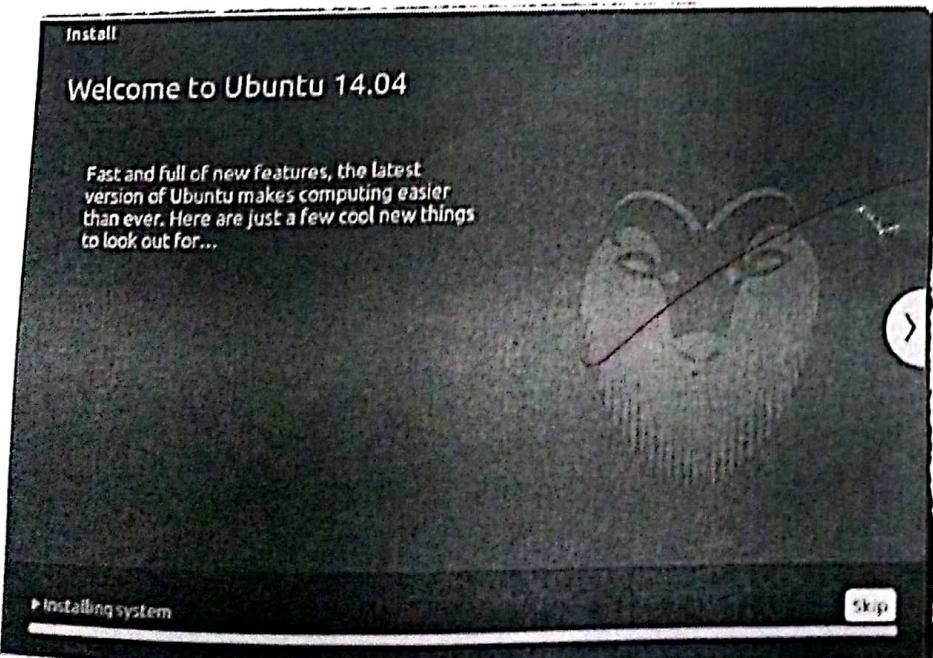
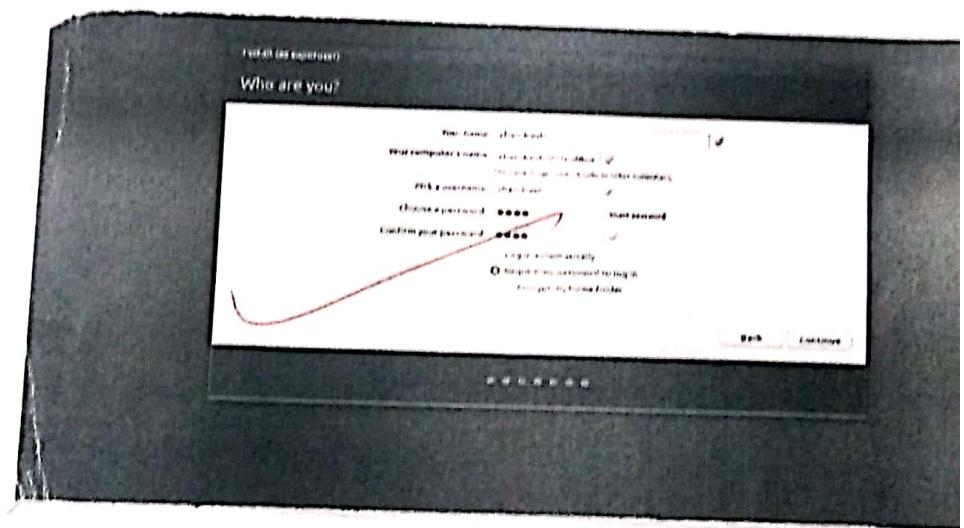
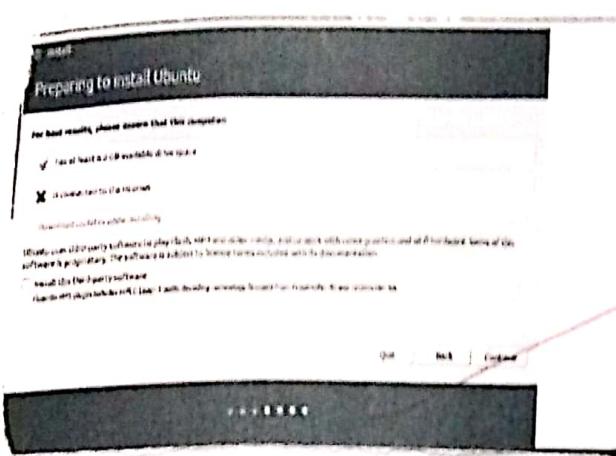
Here you simply need to type Password again and it is done.

Customize desktop environment by arranging different default options like changing default background, themes, screensavers

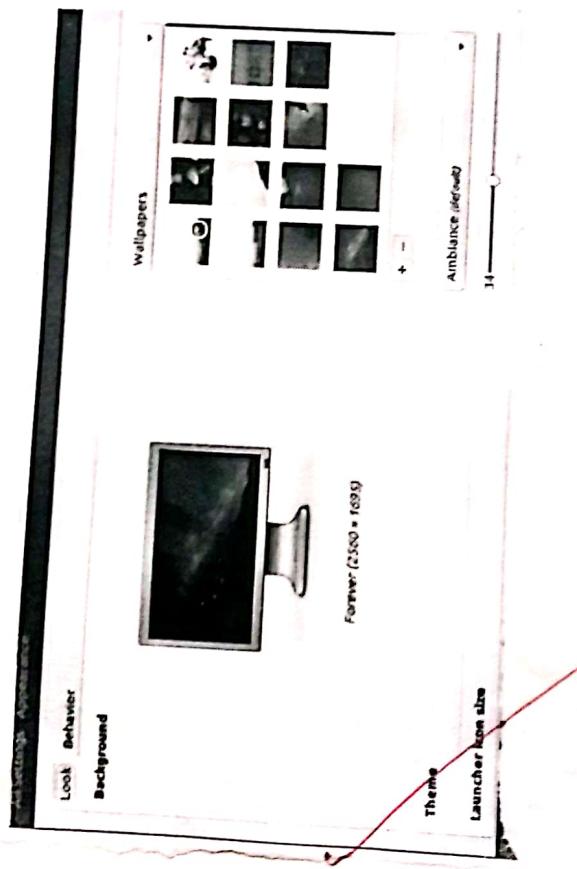
(A) Accessing Appearance setting.

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 settings.

2. A window will pop-up with All Settings divided into Personal, Hardware and system option icons. Let's first select the Appearance icon.



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### (B) changing wallpaper Picture

1. On the left side of Background Panel, you can see your current wallpaper.
2. On the right side is part where we can select one of Ubuntu wallpaper.
3. If you want to select wallpaper from your Picture folder, click the drop-down menu above thumbnails and select Picture folder.
4. You will see all Pictures in your Picture folder as thumbnails, where you can select them as your wallpaper.
5. To add ~~wallpaper~~, just click the plus icon below the thumbnails and then pop-up window, select the path to our custom folder and choose the picture inside it.

## (e) Changing Ubuntu Theme

1. Ubuntu has an option to change the Desktop theme, which in one click will change the entire way computer looks.

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

3. Ambiance is a light theme that looks bit more mac-like, while Radiance is the darker brown theme used in Ubuntu by default.

## D) Change the size or rotation of the screen.

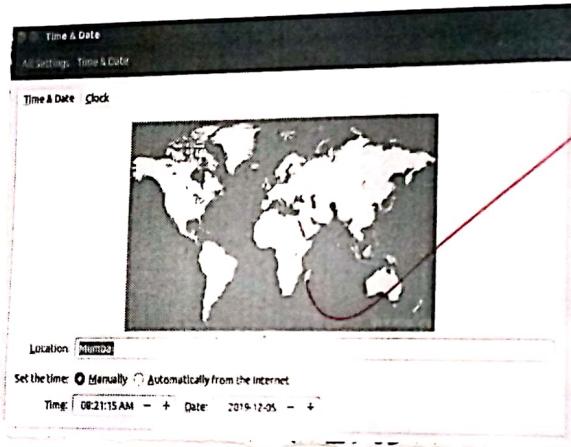
1. You can change how big the things appear on the screen by changing screen resolution.

2. You can change will way the things appear by changing the rotation.

(i) Click the icon on the very right of the menu bar and select system setting.



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- (iii) Open screen Display
- (iv) Select your desired resolution and rotation.
- (v) Click Apply.
- (vi) That way, if you can see anything with new.

(E) Time Setting: change the time zone of your system.

1. If you are currently in Indian Time How does display time change.
2. After noting the time change, change the time zone back to your local time zone.
3. Just click on the clock on the top bar, and choose Time and Date settings, once the time and date window opens; choose manually, so you can change the time and Date manually; otherwise choose your time zone from the map, and choose Automatic.

~~02/01~~

## Practical No-2.

Aim: Installing and Removing Software

(A) 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 installing gcc  
After typing the following command install action 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.

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(5) Now to uninstall gcc completely.

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In GIC 5.1.0, although there is no target to do this, it is recommended to do so. In particular, gcc, so you can do:

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.

PS  
07/01

## PRACTICAL No - 3

Aim: Utilization of grep, man commands.

Documentation:

a) Finding info documentation: from the command line: bring up the info page for grep command. Bring up the usage selection.

Aim:- 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 on your screen.

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

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

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Finding  
page  
example

Ans:- To use  
name )  
Now :  
Commna  
Simply

c) finding  
available

Ans: 'To'  
available  
type

d) finding  
line  
print  
area

Ans: The  
mo  
8  
mai

b) Finding man pages from cmd line. Bring up the man 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) 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 command line: Bring up the man page for the printf lib. function which manual page section are library function found.

The number corresponds to what section of the manual page is from 1 is user command, while 8 is sysadmin staff. The man page for man itself explain & list the std one.

There are certain terms that have different pages in different sections (e.g.: 'print' command appears in section 3); in cases that you can pass the section no. the man before the page name to choose which one you want or use man -t to show every matching page in a screen.

You can tell what sections a term falls with 'man-k' (equivalent to approach command). It will do substituting .match too. So you need to use "term" to do it.

- c) Command-line Help list the available options for the mkdir command. How can you do this?

Ans \$ mkdir -m+rwx directory name.

~~for i~~



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## PRACTICAL No:- 4.

### Command Line Operation.

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a) Install new package  
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 and one level down:

# find / -maxdepth 3 -name password  
• /usr/bin/password  
• /etc/pam.d/password  
• /etc/password.

Find the password file b/w sub directories level 2+4

✓ # find -maxdepth 3 -maxdepth 5 -name pass  
• /usr/bin/password  
• /etc/pam.d/password

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

✓ # ln -s file1 file2

- e) Create an empty file example.txt & move to /tmp directory using relative path name.

# 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 command

# whereis ls

ls : /bin /ls /usr /share /man /mon /l

# whereis ps

ps : /bin /ps /usr /share /man /ps /usr /share /mon /mon /ps /gz

# whereis bash

bash : /bin /bash /etc /bash.bashrc /usr /share /mon /mon /bash /bash .1 .gz



```
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:~$
```

```
jeba@jeba-VirtualBox:~$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs (rw,nosuid,relatime,size=494436k,nr_inodes=123609,mode=755)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,noexec,relatime,size=102416k,mode=755)
/dev/sda1 on / type ext4 (rw,relatime,errors=remount-ro,data=ordered)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k)
tmpfs on /sys/fs/cgroup type tmpfs (ro,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,name=systemd_nsroot=/)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset,nsroot=/)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_cls,net_prio_nsroot=/)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids,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=/)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct)
hugetlbfss on /dev/hugepages type hugetlbfss (rw,relatime)
```

```
jeba@jeba-VirtualBox:~$ ls
Desktop      Downloads      Music      Public      Videos
Documents    examples.desktop jj      Pictures    Templates
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
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt
jeba@jeba-VirtualBox:~/jeb$
```

## PRACTICAL A/I/O - 5

## file operations

1. Explore mounted file system on your computer.  
⇒ df - h
2. What are the different ways of exploring method file systems on Linux?  
⇒ mount
3. Copying text from files.  
⇒ cp command, mv command.

4 Archiving and Backup the word dictionary  
tar, gzip and bzip2 Commands

→ gzip filename.txt  
Bzip filename.txt

```
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$
```

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5. Use  
→ d

```
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
1de
< 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.

```
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
```

5. Use diff command to create diff of two files.  
`diff filename1 filename2`
6. Use patch command to patch file. And analyse the patch using patch command again.

*SJ*  
16/01

## PRACTICAL No - 6

Use Environment:

- a) which account you are logged in? How do you find out?

⇒ who command and ~~wat~~ whomi

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

⇒ cat /etc/shadow

As with the passwd file, each file in the shadow file is also separated with ":" colons. Characters and are as follows.

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

• Password, 13 characters encrypted. A blank entry (eg. ::) indicates a password is not required to login (usually bad idea); and a "\*" entry (eg. ::\*) indicates the account has been disabled.

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 20:30 780 id=tty1  
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 PCPU WHAT  
jeba tty7 :0 20:32 4:28 8.19s 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 tty7 :0 4:38 /sbin/upstart --user  
jeba@jeba-VirtualBox:~\$ w -h  
jeba tty7 :0 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 JCPU PCPU WHAT  
jeba tty7 20:32 5:36 9.00s 0.33s /sbin/upstart --user

jeba@jeba-VirtualBox:~\$ sudo cat /etc/shadow  
[sudo] password for jeba:  
root:!:18240:0:99999:7:::  
daemon:\*:16911:0:99999:7:::  
bin:\*:16911:0:99999:7:::  
sys:\*:16911:0:99999:7:::  
sync:\*:16911:0:99999:7:::  
games:\*:16911:0:99999:7:::  
man:\*:16911:0:99999:7:::  
lp:\*:16911:0:99999:7:::  
mail:\*:16911:0:99999:7:::  
news:\*:16911:0:99999:7:::

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:Mailing List Manager:/var/list:/usr/sbin/nologin

- 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 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 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.

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

- Username, up to 8 characters.. Case-sensitive, usually all lowercase.
- An "x" in the password field. Password are stored in the "Xfd1shadow" 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's full name of user. I'm not sure what the length for this field is, but try to keep it reasonable (under 30 characters)
- User's home directory. Usually /home/username (e.g. /home/smithj) All user's personal web pages, mail forwarding, etc, will be files here.
  - User's "shell account". Often set to "/bin/bash" to provide access to the bash shell (my personal favorite shell)

c) Get your current working directory

⇒ pwd

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

⇒ history  
!line number

e) Create alias to most commonly used commands.

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

⇒ Alias label = "command".

```
jeba@jeba-VirtualBox:~$ pwd
/home/jeba
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:~$ !3
who -l
who -l                               2020-01-15 20:30
LOGIN .    tty1
jeba@jeba-VirtualBox:~$
```

780 id=tty1

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

*100%*

# PRACTICAL No-7.

## Linux Editor: Vi

- i) Create, modify, search and navigate a file in editor.
- 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.

Key  
k

Action.

Moves cursor up

j

Moves cursor down

h

Moves cursor left

l

Moves cursor right

### word Navigation.

Key  
b

Action.

Moves back to the beginning of the word

e

Moves forward to the end of the word

W  
0(zero)  
\$

Moves forward to the beginning of a line.  
Move to first character of a line.  
Move to the end of a line.

## Scrolling.

Key  
ctrl + f  
ctrl + b  
ctrl + d  
ctrl + u

## Action.

Scrolls forward.  
Scrolls backward.  
Scrolls half page.  
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

ii) highlight

Use set hlsSearch

```
Hello  
This is our Linux example  
Welcome  
Welldone  
This is vi editor  
Thank you
```

```
Hello  
This is our Linux example  
Welcome  
Welldone  
This is vi editor  
Thank you
```

Replace with our ex/nano/vim command

```
Hello  
This is our Linux example  
Welcome  
Welldone  
This is vi Editor ..  
Thank you
```

et hitsearch

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

8A

jebag@jeba-VirtualBox: ~

```
1 Hello
2 This is our Linux example
3 Welcome
4 Welldone
5 This is Vi Editor
6 Thank you
```

:set nu

Show the three numbers  
use set no

18  
23 (0)

# PRACTICAL NO: 8

## Linux Security:

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

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

- b) Identify operations that requires sudo privileges
- c) Modify expiration date for new user using password aging.

-E : Expiration Date

-m : Minimum number of days before password changes

-M : Number of days password is valid.

-I : Account inactive

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

```
# 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:/  
sbin:/bin"  
  
# Host alias specification  
  
# User alias specification  
  
# Cmnd alias specification  
  
# User privilege specification  
root    ALL=(ALL:ALL) ALL  
  
user1  ALL=(ALL:ALL) ALL
```

```
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.
```

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

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:~\$

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

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-W : Number of days of waiting before a password change is required.

d) Delete newly added user.

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## PRACTICAL No:- 9

### Network Management

- a) Get IP address of your machine using ifconfig
- b) Get hostname of your machine.
- c) Using Ping to check the network connectivity of remote machines

```
jeba@jeba-VirtualBox: ~
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)
```

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

```
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
```

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 20 22:40:06 IST 2020  
; MSG SIZE rcvd: 59

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 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  
jeba@jeba-VirtualBox:~\$

jeba@jeba-VirtualBox:~\$ arp  
Address HWtype HWaddress Flags Mask Iface  
10.0.2.2 ether 52:54:00:12:35:02 C enp0s3

- a) Use of dig command.
- b) Troubleshooting Network using traceroute, route command.
- c) Use of arp command.

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i) Use of host command

ii) Use of netstat command and Nmap command

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

```
jeba@jeba-VirtualBox:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type      State          I-Node Path
unix  2      [ ]        DGRAM                    42149  /run/user/1000/system
d/notify
unix  2      [ ]        DGRAM                   9694   /run/systemd/journal/
syslog
unix  16     [ ]        DGRAM                   9695   /run/systemd/journal/
dev-log
unix  7      [ ]        DGRAM                   9704   /run/systemd/journal/
socket
unix  3      [ ]        DGRAM
unix  3      [ ]        STREAM     CONNECTED    44842  @/tmp/dbus-CymTeI7AQG
unix  3      [ ]        STREAM     CONNECTED    43331  @/tmp/dbus-CymTeI7AQG
unix  3      [ ]        STREAM     CONNECTED    42988  @/tmp/dbus-CMGGc6G7PS
unix  3      [ ]        STREAM     CONNECTED    42696  @/tmp/dbus-CMGGc6G7PS
unix  3      [ ]        STREAM     CONNECTED    13242  /run/systemd/journal/
stdout
unix  3      [ ]        STREAM     CONNECTED    43113  /run/systemd/journal/
stdout
unix  3      [ ]        STREAM     CONNECTED    43013
unix  3      [ ]        STREAM     CONNECTED    42935
```

```
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): 2404:6800:4007:811::2004
DNS 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
```

tcsc@tcsc-VirtualBox: ~

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

tcsc@tcsc-VirtualBox: ~

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

"linux.sh" [New File]

# PRACTICAL NO - 10

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

Echo \$SHELL

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

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

Step to write and 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
- d) Vi 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)



```
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: $
```

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```
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: ~$
```

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

Program to display your name.

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

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Program to find the sum of two values

vi filename.sh

#!/bin/bash

a=100

b=25

Sum=\$((a + b))

Echo "Sum is: \$sum"

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

```
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: ~$
```

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

```
#!/bin/bash  
sum=$((1+2))  
echo "sum is:$sum"
```

```
"lin.sh" 3 lines, 46 characters
```

```
tcsc@tcsc-VirtualBox: ~$ vi lin.sh
```

```
tcsc@tcsc-VirtualBox: ~$ chmod 777 lin.sh
```

```
tcsc@tcsc-VirtualBox: ~$ ./lin.sh 50 70
```

```
sum is:120
```

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

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

:wq

```
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:~$
```

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 files without actually having to open it.

Consider the following test file:

1) Displaying partial content of a file

With Sed, we can view only part of a file rather than seeing whole file.

easy

2) Display all except some lines:

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

3) Deleting a line:

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

4) Search and Replacing a string:

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

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

Q3.

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

```
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
calclus
computer basic
tcsc@tcsc-VirtualBox:~$
```

```
tcsc@tcsc-VirtualBox:~$ sed '/cs/t "this is linux"' cs.txt
>this is linux"
subjects offered in cs
datastructure
database management
linux
python
green tech
softskill
stats
calclus
computer basic
tcsc@tcsc-VirtualBox:~$
```

Replace a String on a particular line.

To replace a string on a particular line, use line number with 's' option.

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

To add a new line with some content after every pattern match, use option 'o'.

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

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7) 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'.

8) Appending lines.

To add some content before every line with sed, use \* and ? as follows,

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```
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
```

```
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
```

BB  
11/02