

PERFORMANCE

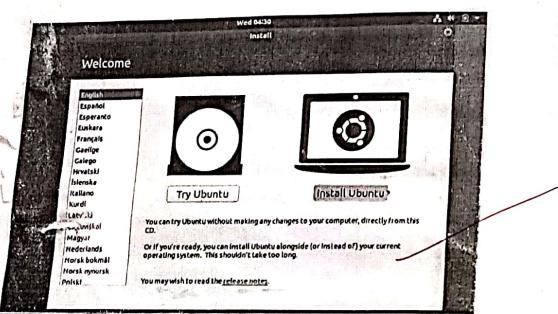
Term	Remarks	Staff Member's Signature
I	Completed	
II	Completed	 26/02

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Practical No. 1

Aim :

- (a) Install your choice of Linux distribution eg. Ubuntu, Fedora etc.
- (b) Customize desktop environment by changing different default options like changing default background, theme, screensavers.
- (c) Screen resolution
- (d) Time settings

- (e) Install your choice of Linux distribution eg. Ubuntu, Fedora using a USB drive.
- Using USB Drive.
 - Most newer computer 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 USB.
 - If your computer doesn't automatically do so, you might need press the F12 key to bring up the boot menu but be careful not to hold it down that can cause an error message.
- (f) Prepare to Install Ubuntu
 - We recommend you plug your computer into 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 also stay connected to the internet so you can get the latest updates while you run it online.
- If you are connected to the internet, you will be able to select a wireless network, provided, we advise to connect during the installation so who can access your machine is up to date.

2.) Allocate drive space

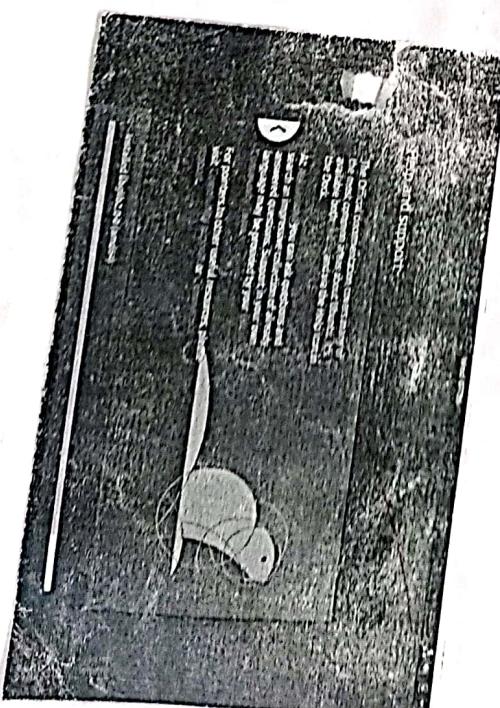
- Use the checkboxes to choose what you had to install Ubuntu alongside another OS, delete existing OS and replace it with Ubuntu, or if you see an 'advanced' option choose the 'something else' option.

3.) Begin the Installation

- Depending on your previous selection, you can reading that you have chosen the way in which you would like the 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 good storage.

4.) Select your location

- If you were connected to the internet, this should be done automatically, check your location is correct and click 'Forward & Proceed'.
- TIP: If you have a problem connecting to the internet, use the menu in the top right hand corner to select a network.



Who are you?

Your name: ✓

Your computer's name: ✓
The name it uses when it logs to other computers.

Pick a username: ✓

Choose a password: Strong password

Confirm your password: ✓

Log in automatically
 Require my password to log in

[Back](#) [Continue](#)

- You can see all the pictures in your Pictures folder as thumbnails - where you can select them as your wallpaper.

⇒ Changing Ubuntu Theme

- Ubuntu also has an option to change the Desktop which is one click will change the entire look of your computer looks.
- To do that, click on the dropdown menu below the wallpaper thumbnails, and then choose between Ambience, Radiance & High Contrast.

Q-3)

- ⇒ changing the size or rotation of the screen
- You can change how big things appear on the screen by changing the screen resolution.
 - You can change which way things appear by changing the rotation.

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

4. Time settings:

- If you are currently in Indian time - how does the displayed time change?
 After noticing the time change, change the time zone back to your local time zone.

PRACTICAL NO. 2

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Aim : Installing and removing software

a) Installing 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.

Now to uninstall gcc compiler?

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

Type : cd build / gcc
sudo make uninstall

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

OK

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Practical No: 3

Aim : Utilization of grep , man commands Documentation

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

→ To find info about any command 'info' command is used the syntax is info command 'ls : 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 knowing info is the man command. The command is same as 'info' but requires data.

- SC
- (b) finding man page from the command 'info'. By pressing up the man page for the 'ls' command scroll down to the examples section
- to see 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 topo what man pages are available that document + file compression
- '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 being of the man page for printf function. When manual page sections are in library function found.
- the number corresponding to what section of the manual page is from 1 to 8. 1 is a S.O.P command, while 8 is sys admin stuff. The man page for man itself explain it and 1 is the std one.

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These are certain terms that have different pages in different sections (e.g.: 'prints' as a command appears in section 1 as 'std::cout' appears in section 3); in cases like these you can pass the section not to the main before the tag @ name to make where @.n you want, or use main() to every function

You can tell what section a team fails in with 'man -id' constraint (e.g. appbox command). It will substitute matches too, so you need 'loop' to implement.

(c) command `linc help` lists the available options for the `medic` command. How can we do this?

\rightarrow \$ m KdP - m, = 8 \times 8 \times \text{dipole by name}

PRACTICAL - 4

COMMAND LINE OPERATIONS

- Install new package on your system
sudo apt-get install [package name]
- Remove the package installed
sudo apt-get remove [package name]
- Find the password file in / using find command.
find / -name password
• /usr/share/doc/nss-(day-253)/password/password
• /usr/bin/passwd
• /etc/password
• /etc/password

Find the password file under root and 2 level down
find / -maxdepth 3 -name /password
• /usr/bin/passwd
• /etc/password/password
• /etc/password

Find the directory password file under root and direct
find / -maxdepth 2 -name password
• /etc/password

Find the password file b/w sub-directories level > -2
find -maxdepth 3 -name password
• /usr/bin/passwd
• /etc/password
• /etc/password

d) Create a symbolic link to the file you found in last step
ln -s file file2

e) Create an empty file example, try to move it to temporary directory using relative pathname
touch example.txt
mv example.txt /tmp

f) Delete the file name to implement previous step by absolute method.
rm /tmp/example.txt

g) Find the location of ls, ps, bash commands
whereis ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz
whereis ps
ps: /bin/ps /usr/share/man/man1/ps.1.gz
whereis bash
bash: /bin/bash /etc/bashrc /usr/share/man/man1/bash.1.gz

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```
jebas-VirtualBox:~$ mount  
ufs on / type ufs5 (rw,nosuid,nodev,noexec,relatime)  
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)  
devpts on /dev/pts type devpts (rw,nosuid,nodev,noexec,relatime,mode=755)  
devpts on /dev/pts type devpts (rw,nosuid,nodev,noexec,relatime,gid=5,mode=620,ptmxmode=000)  
tmpfs on /run type tmpfs (rw,nosuid,nodev,noexec,relatime,size=1024k,mode=755)  
tmpfs on /run type tmpfs (rw,nosuid,nodev,noexec,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 (rw,nosuid,nodev,noexec,mode=755)  
group on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,release_agent_path=/lib/systemd/systemd-cgroups-agent,name=sysntsd,nsroot=/)  
storage on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)  
group on /sys/fs/cgroup/bustype type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset,nsroot=/)  
group on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_cls_ns,net_prio_ns,nsroot=/)  
group on /sys/fs/cgroup/plid type cgroup (rw,nosuid,nodev,noexec,relatime,plid,nsroot=/)  
group on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer,nsroot=/)  
group on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpuacct_nsroot=/)  
group on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices,nsroot=/)  
group on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory,nsroot=/)  
group on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio,nsroot=/)  
group on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event_nsroot=/)  
group on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb,nsroot=/)  
bind-1 on /proc/sys/vfs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct)  
ublfbs on /dev/hugepages type hugetlbfs (rw,relatime)
```

4. Archiving and backup the specific directory using tar, gzip commands.

AB : gzip filename.txt

Bzfp filename.txt

5. Use diff command to create diff of two files
 Ans : diff filename1 filename2

```
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz ss.txt.gz
jeba@jeba-VirtualBox:~/jeb$ cat >aa.txt
hello world
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
^C
this is Linux
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
1d0
< hello world
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
^C
this is Linux
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
jeba@jeba-VirtualBox:~/jeb$ Binary files aa.txt.gz and bb.txt.gz differ
```

6. Use patch command to patch a file And Analyze
 + patch command again

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

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PRACTICAL NO-6

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Job Environment

- a) which account you logged in? How do you find out?
 Ans : who command & whoami

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

Time	User	TTY	FROM	LOGIN	IDLE	JCPU	PCPU	WHAT
2020-01-15 20:32	jeba	tty7	:0		4:28	8.19s	0.33s	/sbin/upstart
2020-01-15 20:32	jeba	tty1	:0		4:38	8.19s	0.33s	/sbin/upstart
2020-01-15 20:32	jeba	tty1	:0		4:44	8.67s	0.33s	/sbin/upstart
2020-01-15 20:32	jeba	tty7	:0		5:36	9.00s	0.33s	/sbin/upstart

- b) Display /etc/shadow file using cat command and understand the importance of shadow
 Ans: cat /etc/shadow

As with the password file, each field in the shadow file is also separated with ":" colons characters and are as follows:

username, up to 8 characters - case sensitive, usually all lowercase . After mark to username in the /etc/passwd file.

- password - 13 characters encrypted. A blank entry (eg: :) indicates a password not required to log-in and a "*" indicates the account has been disabled.
- the number of days since password was last changed.
- the number of days after which password must be changed
- the number of days before which password must be changed
- the number of days to warn user of an expiring password
- the number of days since January 1, 1970 that an account has existed
- A reserved field for possible future use.

```
jeba@jeba-VirtualBox:~$ sudo cat /etc/passwd
```

- Each field in a passwd is separated by the ":" colon character (top).
and are as follows:
- Username up to 8 characters, case sensitive, usually all lowercase.
 - An '*' in the password field - password are stored in "/etc/shadow" file manner for enhanced file security - usually the shadowed user id.
 - Numeric user id - this is assigned by the "adduser" script.
 - Unix uses this field, plus the following group field.
 - Numeric group id - Red Hat uses group id's in a fairly unique manner for enhanced file security - usually the group id user id.
 - Full name of user - I'm not sure what the maximum length of this is, but try to keep it reasonable. (under 30 characters?)
 - User's home directory, usually /home/username (e.g., /home/miln). All users personal files, web pages, mail forwarding etc.
 - User's shell account option set to "bin/bash" to provide access to the bash shell (my)

```
jeba@jeba-VirtualBox:~$ sudo cat /etc/passwd
```

c) get your current working directory

Ans : pwd .

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

d) explore different ways of getting command history since you previously executed command without typing it

! line number

"! 1000" (written)

```
jeba@jeba-VirtualBox:~$ ! 1000
jeba@jeba-VirtualBox:~$ history
1 who
2 want
3 who -l
4 clear
5 w
6 w s
7 w l
8 w -r
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 1
jeba@jeba-VirtualBox:~$ ! 13
LOGIN    ttv1      2020-01-15 20:38
jeba@jeba-VirtualBox:~$
```

e) Create alias to most commonly used commands

alias commands instruct the system to replace one string with another string executing the command

Ans: alias new="mkdir \$1"

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

PRACTICAL NO: 4

Linux Editor : Vi*

- a) 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.

- civ) Navigate :

Movement for fast operation

Key	Action
k	Moves cursor up
j	Moves cursor down
h	Moves cursor left
l	Moves cursor right

Word Navigation

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

SCROLLING

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

i) `syncread` : /g /word to be replaced /s/ new word /g/c

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

I
```

```
jeba@jeba-VirtualBox:~$ :g/s//our/gc
Hello
This is our Linux example
Welcome
Welldone
This is Vt Editor
Thank you
```

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

ii) highlight

use `set hlsearch`

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

iii) show the line number?

use `setnu`

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

(Handwritten note: 1 2 3 4 5 6 7)

PRACTICA 2 NO: 8

Linux Practical Security

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

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

- b) To give some user's root privileges edit /etc/sudoers or visudo . Enter new line highlighted below.

```
# Please Consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
# Defaults env_reset
#Defaults mail_badpass
#Defaults secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin/"
# Host alias specification
# User alias specification
# Cmnd alias specification
# User privilege specification
root    ALL=(ALL:ALL) ALL
user1  ALL=(ALL:ALL) ALL
```

- b) Identifying operations that require sudo privileges

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

- c) Identifying correct extraction and set new using command aging.

```
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 29, 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]: 2020-05-28
      Password Expiration Warning [7]: 5
      Account Inactive [-1]:
      Account Expiration Date (YYYY-MM-DD) [-1]: 2020-05-31
      Last password change
      Password expires
      Password inactive
      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 -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: 30
Number of days of warning before password expires: 5
```

- E : expiration Date
- m : minimum number of Days before changing password
- M : number of Days password is valid
- I : Account Inactive
- W : Number of Days of warning before password change is required.

d) Delete newly added user

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

✓✓✓✓✓

PERIODICAL NO: 9 NETWORK Management

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a) Get IP address of your machine using ifconfig

```
jeba@jeba-VirtualBox:~$ ifconfig
enp0s3      Link encap:Ethernet HWaddr 08:00:27:0e:6b:69
            inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
            UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
            RX packets:7 errors:0 dropped:0 overruns:0 frame:0
            TX packets:53240 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
            UP LOOPBACK RUNNING MTU:65536 Metric:1
            RX packets:53240 errors:0 dropped:0 overruns:0 frame:0
            TX packets:53240 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1
            RX bytes:4225072 (4.2 MB) TX bytes:4225072 (4.2 MB)
```

b) Get hostname of your machine

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

c) use ping to check the network connectivity to remote machines.

```
[chaga@jeba-VirtualBox:~]$ ping www.google.com
PING www.google.com (172.217.31.196) 56(84) bytes of data.
44 bytes from maa03s28-ln-f4.1e100.net (172.217.31.196): icmp_seq=1 ttl=54 time=97.8 ms
44 bytes from maa03s28-ln-f4.1e100.net (172.217.31.196): icmp_seq=2 ttl=54 time=82.0 ms
44 bytes from maa03s28-ln-f4.1e100.net (172.217.31.196): icmp_seq=3 ttl=54 time=84.8 ms
44 bytes from maa03s28-ln-f4.1e100.net (172.217.31.196): icmp_seq=4 ttl=54 time=84.8 ms
44 bytes from maa03s28-ln-f4.1e100.net (172.217.31.196): icmp_seq=5 ttl=54 time=93.5 ms
44 bytes from maa03s28-ln-f4.1e100.net (172.217.31.196): icmp_seq=6 ttl=54 time=86.9 ms
44 bytes from maa03s28-ln-f4.1e100.net (172.217.31.196): icmp_seq=7 ttl=54 time=98.8 ms
44 bytes from maa03s28-ln-f4.1e100.net (172.217.31.196): icmp_seq=8 ttl=54 time=109.9 ms
Z
1+ Stopped
chaga@jeba-VirtualBox:~$ ping www.google.com
```

d) use of dig command

```
jeba@jeba-VirtualBox:~$ dig www.google.com
;; global options: +cmd
; Got answer:
;-->>HEADER<-- opcode: QUERY, status: NOERROR, id: 52068
; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
; OPT PSEUDOSECTION:
; EDNS: version: 0, flags: udp: 4096
; QUESTION SECTION:
;www.google.com.           IN      A
; ANSWER SECTION:
www.google.com.         91      IN      A      172.217.166.100
; QUERY time: 152 msec
; SERVER: 127.0.1.1#53(127.0.1.1)
; WHEN: Mon Jan 20 21:46:06 IST 2020
; MSG SIZE rcvd: 59

jeba@jeba-VirtualBox:~$
```

e) troubleshoot no topic using traceroute , ping command

```
[...@jeba:jeba-VirtualBox-] jeba@jeba-VirtualBox:~$ traceroute www.google.com  
traceroute to www.google.com [172.217.166.100], 30 hops max, 60 byte packets  
 1 10.0.2.2 (10.0.2.2) 0.190 ms 0.143 ms 0.151 ms  
 2 * * *  
 3 10.0.2.2 (10.0.2.2) 68.568 ms 68.486 ms 68.485 ms  
[...@jeba:jeba-VirtualBox-] jeba@jeba-VirtualBox:~$
```

Kernel IP Routing table						
Destination	Gateway	Genmask	Flags	Metric	Ref	Use
0.0.0.0	10.0.2.2	0.0.0.0	UC	100	0	0 enp0s3
link-local	*	255.255.255.0	U	100	0	0 enp0s3
		255.255.0.0		1000	0	0 enp0s3

f) use of app command

Address	Hwtype	Hwaddress	Flags	Mask	Iface
16.0.2.2	ether	52:54:00:12:35:82	C		enp0
3					

g) use of netstat command and nmap command

```
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): 2404:6880:4087:811::2004
RDNSS record for 216.58.196.68: bomo5s1i4n-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 26.32 seconds
jeba@jeba-VirtualBox:~$
```

38 use of host command

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

Yours
Jeba

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PRACTICAL NO-10

Aim :- SHELL SCRIPTING

Basics of shell scripting

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

Echo \$SHELL

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

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

#!/bin/bash

echo "THIS IS LINUX!"

"linux.sh" [New File]

* Chmod 777 filename.sh

./filename.sh

tscs@tscs-VirtualBox:~

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

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

Program to Display Your Name

#!/bin/bash

Echo "Enter Your Name!"

Read Name

Echo "My Name is : \$name"

tscs@tscs-VirtualBox:~

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

tscs@tscs-VirtualBox:~

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

02
Program to find sum of two variables

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

```
tcsc@tcsc-VirtualBox: ~
# ./lin.sh
a=10
b=25
sum=$((a+b))
echo "Sum is : $sum"
Sum is : 35
```

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

Program

51
Program to find sum of two numbers C values passed during execution

```
tcsc@tcsc-VirtualBox: ~
$ ./lin.sh
sum is:120
lin.sh 3 lines, 46 characters
```

```
tcsc@tcsc-VirtualBox: ~
$ vi lin.sh
$ chmod 777 lin.sh
$ ./lin.sh
sum is:120
$
```

Sed

Sed command or stream editor is very powerful utility offered by Linux systems. It's mainly used for text substitution, replace, but it can perform other text manipulation like insertion, deletion, selection, search, etc. When sed is used we can edit complete files without actually having to open it.

1)

Consider the following text file

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

- 1) Displaying partial part of a file
With sed view only part of file rather than
seeing whole file.

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

2) Display all except some lines
To display all content of a file except few some
portion use 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:~$
```

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3) Deleting a line

To Delete a line use line number followed by 'd'

```
@ - 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:~$
```

4) Search and Replace a string

's' option is for searching accsed.

```
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
```

5c

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

```
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) To 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:~$
```

5d

- 6) 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:~$
```

- 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'

```
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:~$
```

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a) Appending lines

To add some content before very
line with sed use & anal & 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
```

26/02

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