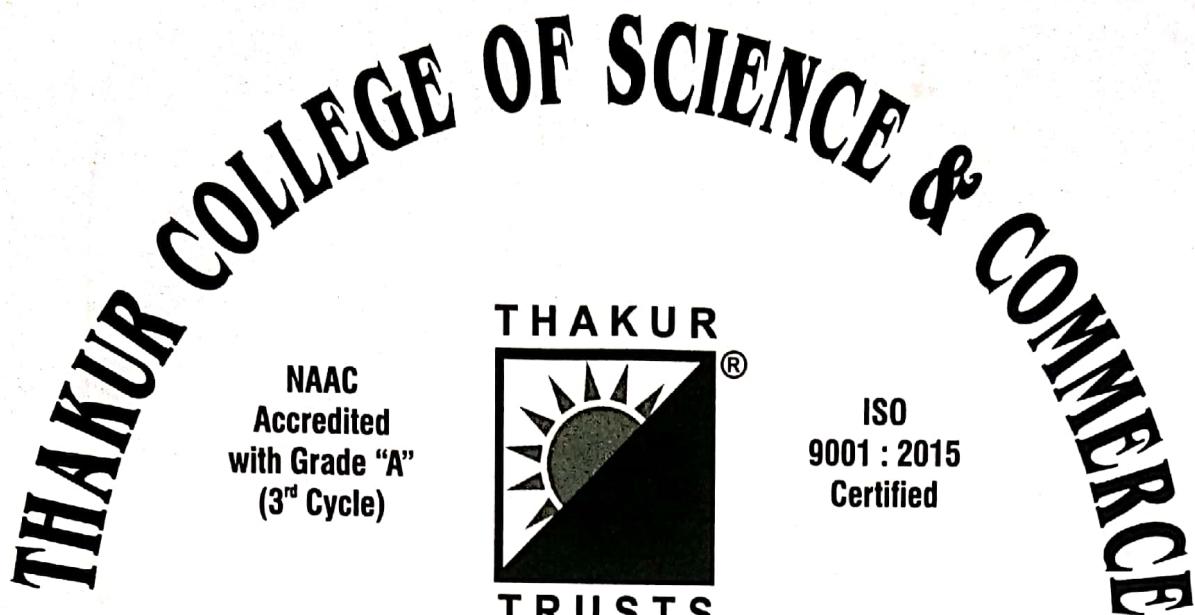


PERFORMANCE

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Computer Journal
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Shivkumar
who has worked for the year 2019-20 in the Computer Laboratory.

Teacher In-Charge

Date : _____

Head of Department

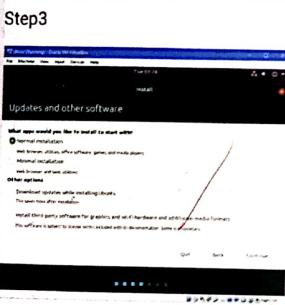
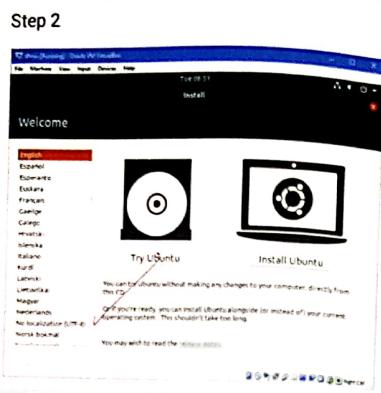
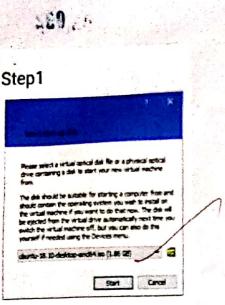
Examiner



INDEX



No.	Title	Page No.	Date	Staff Member's Signature
01	Install your choice of Linux distribution. [UBUNTU]	33	30/11/19	✓
02	Installing and removing software	38	21/12/19	✓ 100%
03	Utilization of grep, man command	39	21/12/19	✓ 100%
04	Command line operation	42	4/01/20	✓ 100%
05	File Operation	43	4/01/20	✓ 100%
06	User Environment	45	11/11/20	✓
07	Linux Editor : Vi	47	11/11/20	✓
08	Linux Security	49	18/11/20	✓ 100%
09	Network Management	50	1/12/20	✓ 100%
10	Shell Scripting	52	8/02/20	✓ 100%



PRACTICAL - 01

Aim :- Install your choice of Linux Distribution e.g. Ubuntu, Fedora, Debian.

Ubuntu & Ubuntu is a free and open source software based on debian. It is officially released under 3 edition - Desktop, Server, Union.

All the editions can be run on the computer alone or a virtual box machine.

It is a popular open source software for cloud computing with support of openstack.

Steps for installing Ubuntu in a virtual machine:

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

Step 2 : Select the language of your choice and click on 'Install Ubuntu'.

You can also 'try ubuntu' for free on computer device from this CD.

Step 3 : In 'Update and add Software' click on the normal installation.

68

Step 4: While configuring installation type we need to click 'Erase disk and install Ubuntu'. This step would delete all types of documents, photos, etc in all operating system.

Step 5: In this you only need to choose the location for the clock to work on ubuntu.

Step 6: In this type you need to choose username and password for the in Ubuntu and then click on continue.

Step 7: Here you simply need to type password again and it is done.

Step 8: Type name of virtual disk and recommend size to be given is 2048 GB or 27 GB

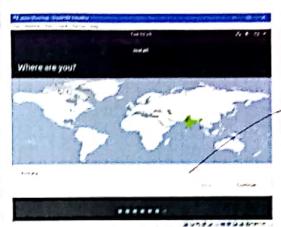
Therefore, now the VirtualBox is ready to use

b) Customize desktop environment by changing different default option like changing default background, theme, screensavers.

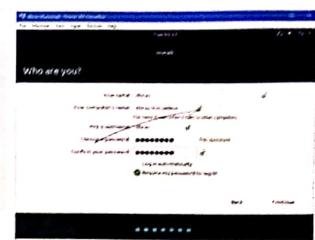
Accessing Appearance setting:

69

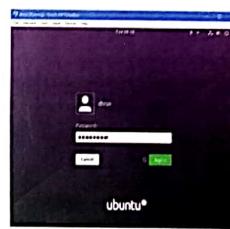
Step 5



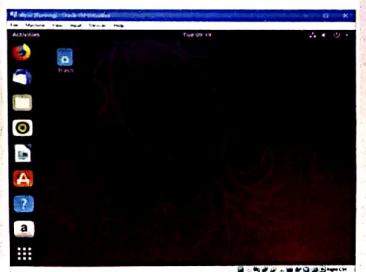
Step 6

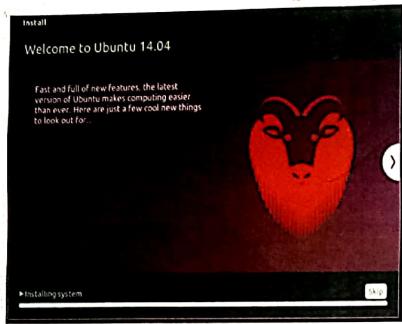


Step 7



Step 8





- 1) To access Appearance settings 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's icons. Let's first select the appearance icon.
- Changing Wallpaper picture:
- 1) On the left side of background part, you can see your current wallpaper.
 - 2) On the right side is part where we can select one of Ubuntu wallpaper. Clicking on any thumbnail our wallpaper will be changed right away, with a fading.
 - 3) If you want to Select wallpaper from your picture folder, click the drop-down menu above thumbnails and Select the Picture folder.
 - 4) You will see all the picture in your Picture folder as thumbnail, where you can select them as your wallpaper.

To add wallpaper that is in another folder, just click the plus icon below the thumbnail and then in pop-up window, Select the path to our custom folder.

and choose the picture inside of it.

Changing Ubuntu Theme:

- 1) Ubuntu also has an option to change the Desktop Theme, which in one click will change the entire way your computer looks.
- 2) To do that, click on the drop-down menu below the wallpaper thumbnail and choose between Ambience, Radiance or High contrast.
- 3) Ambience is a light theme that looks a bit more mac-like while Radiance is the darker brown theme used in Ubuntu by default.
- c) Screen Resolution: Ascertain the current screen resolution for your desktop

Change the size or rotation of the Screen:

- 1) You can change the big things appear on the screen by the screen resolution.
- 2) You can change which way up things appear (for ex, if you have rotating display) by changing the rotation.



PRACTICAL - 02

Aim: 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 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 do have it, particularly `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++`, `c++` contained in that directory.

PRACTICAL - 03

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 the usage section
- > To find information about any command, 'info' command is used. The syntax for this is info (command name)
- We are going to find the info about the grep command:

Open the terminal ($Ctrl + Alt + T$) and type: info grep

- After typing this command following output will be displayed on to your screen.
- You can also scroll through page using (Space = Up) & (Shift + back space = Down) Keys.
- Another more summarized form of showing info is the 'man' command. The command is same as info, but required data:

- b) Finding man pages from the command line: Bring up the man page for the 'ls' command scroll down the example section.
- To use the 'man' command simply type 'man' (command name)
- Now we are going to find the manual for 'ls'
Type: 'man ls'.

c) Finding man pages by topic: 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 tar

Man tar

Output:

Name

tar - an archiving utility

Synopsis

Traditional usage

tar [A/c/d/r/t/u/x][Gnux Wompslk] [ARG...]

UNIX-style usage

tar -A [OPTIONS] Archive Archive

tar -c [-f ARCHIVE] [OPTIONS] [FILE...]

tar -d [-f ARCHIVE] [OPTION] [FILE...]

tar -f [-f ARCHIVE] [OPTION] [MEMBER...]

tar -r [-f ARCHIVE] [OPTION] [FILE...]

tar -u [-f ARCHIVE] [OPTION] [FILE...]

tar -x [-f ARCHIVE] [OPTION] [MEMBER...]

GNU style usage

tar [--l|alternate / --c|concatenate [Option] Archive

tar [-d|--decompress] [.... file ARCHIVE] [OPTION] [FILE...]

tar [--diff|-c|compare] [.. file ARCHIVE]

Output:

NAME:

zip - Package and compress (archive) files

SYNOPSIS

zip [-ABcdEFghjKLmopqrstuwxyz@!] [-longoption...]
[-b[atch]] [-nsuffixes] [-t[date]] [-tt[date]] [-z[ipfile...]]

zipcloak (see separate man page)

zipnote (see separate man page)

zipsplit (see separate man page)

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

DESCRIPTION:

zip is a compression and file packaging utility for Unix, VMS, MSdos, OS/2, Windows, Minix, Amiga, and RISC OS.

It is analogous to a combination of the Unix commands tar(1) and compress(1).

A companion program (unzip(1)) unpacks zip archives. The zip and unzip(1) programs can work with archives produced by PKZIP (supporting most PKZIP features up to PKZIP version 4.6).

- c) d) finding man pages by section from the command line bring up the man page for 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 system admin staff. The man page for man itself explain it and list the output

MANUAL SECTIONS

The standard section of the manual include:

- 1 User Commands
- 2 System calls
- 3 C Library Function
- 4 Devices and Special Files
- 5 File Format and Conventions
- 6 Games et. al
- 7 Miscellanea
- 8 System Administration tools and Demons

Distribution customise the manual sections to their specific, which often include additional section.

There are certain terms that have different pages in different section (printf as a command appears in section 1 as a 'Stlib' function appears in section 3); in case like that you can pass the section no. to the man before the page name to choose which one you want to show matching page in raw.

```
$ man 1 printf
$ man 3 printf
$ man -c printf
$ man -k '^printf'
printf          (1) - Format and Print data
printf         (2) - Write format output
printf          (3) - Format output conversion
printf          (3p) - Print Formatted Outputs
printf [builtins] (1) - List built-in commands, see bash(1)
```

You can tell the what section a term falls in with !man. It will do substring matches so you need to use "term" to limit it.

- e) Command-Line Help List the available options for the mkdir command. How can you do this?

→ \$ mkdir = m a=rwx directory name.

yn
= 0
=

189

PRACTICAL NO: 4

Command Line operation:

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

✓ # / -name password

• /usr/share/doc/nss-1/dap-253/and/password

• /usr/bin/passwd

• /etc/passwd/password

• /etc/passwd

d) Find the directory password file under root and one level down

find / -max_depth 2-name passwd

• /etc/passwd

e) Find the password file under root and 2 level down

find / -max_depth 3-name passwd

• /usr/bin/passwd

• /etc/pam.d/passwd

• /etc/passwd

f) Find the password file b/w sub-direction level 2 & 4

find -max_depth 3 -max_depth 5-name passwd

• /usr/bin/passwd

• /etc/pam.d/passwd

g) Create a symbolic link to the file you find in last step

ln -s file1 file2

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

touch example.txt

mv example.txt /tmp

i) Delete the file moved to /tmp in previous step by absolute method.

rm /tmp/example.txt

j) find the location of ls , ps , bash commands

whereis ls

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

190

Where is ps
ps:/bin/ps |usr/share/man/man1/ps.1.gz

Where is bash
bash:/bin/bash|etc|bash|bashrc|usr/share/man/man1/bash.1.gz

11/01

PRACTICAL NO: 5

Topic :- File Operation :-

1. Explore mounted file system on your computer.

Ans:- df -k

```
File Edit View Search Terminal Help
To run a command as administrator (super user), use sudo su -c command
Administrator@Ubuntu: ~ $ df -k
Filesystem      1K-blocks   Used   Available   Use%
/dev/sda1        11536000  11536000       1000000    100%
udev            11536000      1200       11536000    1%
tmpfs           11536000  11536000       1000000    100%
/dev/sda2        2867776  2867776        2580960    100%
tmpfs           2867776  2867776        2580960    100%
/dev/sda3        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda4        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda5        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda6        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda7        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda8        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda9        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda10       5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
```

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

Ans:- mount

```
Administrator@Ubuntu: ~ $ mount
Filesystem      1K-blocks   Used   Available   Use%
/dev/sda1        11536000  11536000       1000000    100%
udev            11536000      1200       11536000    1%
tmpfs           11536000  11536000       1000000    100%
/dev/sda2        2867776  2867776        2580960    100%
tmpfs           2867776  2867776        2580960    100%
/dev/sda3        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda4        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda5        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda6        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda7        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda8        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda9        5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
/dev/sda10       5888000  5888000        5399200    100%
tmpfs           5888000  5888000        5399200    100%
```

3) Copying text from files.

Ans:- cp Command, mv command

```
File Edit View Search Terminal Help
surajankal17380@fybsc-cs:~/nos$ touch ss.txt
surajankal17380@fybsc-cs:~/nos$ mv gg.txt ss.txt
surajankal17380@fybsc-cs:~/nos$ cat ss.txt
welcome
Linux
surajankal17380@fybsc-cs:~/nos$ _
```

- 4 Archiving and backup the work directory using tar, gzip and bzip2 commands.

Anso:- 9ZIP filename.txt
BZIP filename.txt

44

5) Use diff command to create diff of two files.

Ans: diff filename1 filename2

6) USE Patch command to patch a file. And analyze the patch using patch command again

10/6/01

183

Practical 6

Topic :- Use Environment

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

Ans: Who command and whom

```
surajankal17@vrybssc-cz: ~ $ who  
root@surajankal17@vrybssc-cz: ~ $ who  
root          2020-01-25 17:16 (:0)  
narendra     * 20  
surajankal17@vrybssc-cz: ~ $ whoami  
surajankal17@vrybssc-cz: ~ $ who -l  
surajankal17@vrybssc-cz: ~ $
```

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

Ans: cat/etc/Shadow

AS with the passwd file, in the shadow is also separated with ":" colon characters, and are as follows

R45

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

- password**, 13 character encrypted. A blank entry indicates a password is not required to log in and a ~~“”~~ indicates account has been disabled.

- The number of days before password may be changed.

- The number of days after which password must be changed (U indicates it may be changed at any time).

- The number of days after password expires that account is disabled.

- The number of days January 1, 1970 the circound has been described

- A reserved field for possible future use

```
surajankal1738@yhsbc-cc: ~ $ sudo cat /etc/shadow  
[sudo] password for surajankal1738:  
Sorry, try again.  
[sudo] password for surajankal1738:  
[root]:!:18283:0:99999:7::  
daemon:*:18113:0:99999:7::  
bin:*:18113:0:99999:7::  
sys:*:18113:0:99999:7::  
sync:*:18113:0:99999:7::  
games:*:18113:0:99999:7::  
man:*:18113:0:99999:7::  
nologin:*:18113:0:99999:7::
```

- Each field in a passwd entry separated with ":" and are as follows:
- An "x" in the password field. Pass words are stored in "/etc/shadow" file.
 - Numeric user id . This is assigned by the "cat user" script. Unix uses this file plus following group files.
 - Full name of user , but try to keep reasonable
 - User's shell account ". often set to "/bin/bash" to provide access to the shell

```
surajankal1738@fybsc-cs: ~ $ sudo cat /etc/shadow
[sudo] password for surajankal1738:
Sorry, try again.
[sudo] password for surajankal1738:
root::18283:0:99999:7:::
daemon:*:18113:0:99999:7:::
bin:*:18113:0:99999:7:::
sys:*:18113:0:99999:7:::
sync:*:18113:0:99999:7:::
games:*:18113:0:99999:7:::
man:*:18113:0:99999:7:::
```

- c) Get your current working directory
Ans pwd

```
File Edit View Search Terminal Help
surajankal1738@fybsc-cs: /new$ pwd
/home/surajankal1738/new
surajankal1738@fybsc-cs: /new$ _
```

- d) Explain ways of getting command history now to run previously executed command without typing it
Ans :- history
→ line number

```
File Edit View Search Terminal Help
surajankal1738@fybsc-cs: $ history
1 df -k
2 clear
3 mount
4 mount
5 cp commands,mv commands
6 ls
7 ls
8 cd suraj
9 cat gg.txt
10 cat gg.txt
11 cat gg.txt
12 add
13 -l
14 sudo
```

- e) Create alias to most commonly used command
Ans :- alias label = "command"

Surajankal1738@fybsc-cs: ~ \$ alias m="mkdir news"
surajankal1738@fybsc-cs: ~ \$ m
surajankal1738@fybsc-cs: ~ \$
: command not found
surajankal1738@fybsc-cs: ~ \$ ls
Desktop examples.desktop
Documents gg.txt
Downloads gg.txt
Music hi.txt
surajankal1738@fybsc-cs: ~ \$

529

PRACTICAL 07:

TOPIC :- LINUX Editors : Vi

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

i) Creating a file

To create a file, on 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)

530

q.v) Navigate

Movement in Four direction.

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 beginning of word
e	Moves forward to end of word
w	Moves forward to beginning of word
o (zero)	Moves first character line
\$	Moves to end line.

Scrolling

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

b) Replace:

Syntax: /g/word to be replaced /s/newword

```
jeba@jeba-VirtualBox: ~
Hello
This is my Linux example
Welcome
Welldone
This is Vi Editor
Thank you
I
:g/Hello/This/gc
```

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

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

ii) Highlight

use set hlsearch

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

iii) Show the line number

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

8/01/02

PRACTICAL : 8

TOPIC :- Linux Security

a) Use of sudo to change user privilege to root
→ Create an user named user1

```
[file Edit View Search Terminal Help]
curl -jnkal1730@fylcse:~$ sudo useradd user1
[sudo] password for surajankal1730:
curl -jnkal1730@fylcse:~$ sudo passwd user1
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
surajankal1730@fylcse:~$ _
```

```
% sudo visudo
# User privilege specification
root    ALL=(ALL)ALL
%wheel  ALL=(ALL)ALL

# Cmnd alias specification
# %wheel        /usr/bin/ls, /usr/bin/cat

# User alias specification
# %wheel        user1, user2

# Group alias specification
# %wheel        group1, group2

# Host alias specification
# %wheel        host1, host2

# Default command interpreter specification
# Defaults    shell=/bin/sh
```

b) Identify operation the require sudo Privileges

```
[root@rhel8 ~]# ssh user@192.168.1.113 -p 22
[ssh] user@192.168.1.113:~ % $ sudo chage -E 23/01/2020 -n -10 -R -10 -u
[ssh] user@192.168.1.113:~ % $ sudo chage -l user
Last password change : Jan 26, 2020
Password expires    : Apr 25, 2020
Account expires     : May 25, 2020
Minimum age          : Jan 01, 2022
Maximum age          : 30
Number of days between password change: 90
Number of days of warning before password expires: 30
[ssh] user@192.168.1.113:~ %
```

c) Modify expiration date for new user using password ageing

```
[root@centos ~]# $ sudo chage user1
[sudo] password for surajmal73@:
[sudo] password for surajmal73@:
[sudo] password for surajmal73@:
Sorry, try again.
[sudo] password for surajmal73@:
[sudo] password for surajmal73@:
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
    Password Inactive [1..999]: 1
    Password Expire Date [YYYY-MM-DD] [-1]: 2020-01-26
    Password Inactive [-1]: 1
    Password Expire Date [YYYY-MM-DD] [-1]: 2020-01-31

surajmal73@centos ~]# $ sudo chage -l user1
Last password change: Jan 26, 2020
Password expires: Aug 13, 2020
Password Inactive: never
Account expires: Jan 31, 2020
Minimum number of days between password change: 100
Maximum number of days between password change: 99999
Number of days of warning before password expires: 5
```

```
File Edit View Search Terminal Help
surajankal17@MyBook:~$ sudo chage -l user1
Last password change : Jan 25, 2020
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
surajankal17@MyBook:~$
```

E - Expiration Date

m : minimum number of days before change

M^o: Number of days password is valid

I : Account inactive

w% - Number of days of warning - Change is required

d) Delete newly added user

```
File Edit View Search Terminal Help
surajankal1738@fybsc-cs: ~$ sudo userdel user1
surajankal1738@fybsc-cs: ~$ su user1
No password entry for user 'user1'
surajankal1738@fybsc-cs: ~$ _
```

40

PRACTICAL 8.9 Network Management

a) Get IP address of your machine using ifconfig

```

[root@rhel7 ~]# ./tunefw < /etc/config
ens3: flags=4163<NOFORWDIGIT,BROADCAST,MULTICAST> mtu 1500
        link 192.168.1.103 brd 192.168.1.255
        netmask 255.255.255.0 broadcast 192.168.1.255
        scope 0
        txqueuelen 1000
        qdisc mq
          ether 00:0C:29:CC:43:42 brd 0:0:0:0:0:0
          txqueuelen 1000 :ethernet
          RX packets 20377 bytes 207658 (26.7 MB)
          Rx errors 0 dropped 0 overruns 0 carrier 0 collisions 0
          RX frame 15955 bytes 154924 (14.6 KB)
          Tx packets 414492 bytes 414492 (38.6 KB)
          Tx errors 0 dropped 0 overruns 0 carrier 0 collisions 0
          device interrupt 15 base 0x2000
          queueing discipline mq

lo: flags=41<NOFORWDIGIT,BROADCAST,RUNNING> mtu 65536
        link 127.0.0.1 brd 127.0.0.1
        netmask 255.255.255.0 broadcast 127.0.0.1
        queueing discipline noqueue
        txqueuelen 0 :loopback
        RX packets 373 bytes 32367 (32.3 KB)
        Rx errors 0 dropped 0 overruns 0 carrier 0 collisions 0
        RX frame 373 bytes 32367 (32.3 KB)
        Tx packets 373 bytes 32367 (32.3 KB)
        Tx errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

b) Get hostname of your machine

```
surajankal173@fybsc-cs:~$ hostname  
fybsc-cs  
surajankal173@fybsc-cs:~$ _
```

c) Use ping to check the network connectivity to remote machine

d) Use of dig command

```

$ dig www.google.com
;; OPT PSEUDOSECTION
;EDNS: version: 0, flags: udp: 65494
;QUESTION SECTION
www.google.com.          IN      A
;; ANSWER SECTION:
www.google.com.          5      IN      A    172.237.166.36

;; Query time: 7 msec
;; SERVER: 127.0.0.5[127.0.0.5]
;; WHEN: Fri Mar 25 19:55:32 CEST 2020
;; MSG SIZE rcvd: 39

$ curl -m 1 https://www.google.com

```

c) Troubleshooting network using traceroute, route command

```
[root@centos ~]# curl -I http://www.google.com
HTTP/1.1 200 OK
Date: Mon, 22 Jul 2013 09:45:00 GMT
Server: gws
Content-Type: text/html; charset=UTF-8
Content-Length: 1000000
X-XSS-Protection: 1; mode=block
X-Frame-Options: SAMEORIGIN
X-Content-Type-Options: nosniff
Vary: Accept-Encoding
Cache-Control: no-cache, no-store, max-age=0, must-revalidate
Expires: Mon, 22 Jul 2013 09:45:00 GMT
P3P: CP="This is not a P3P policy file. See http://www.google.com/policies/privacy/ for the actual P3P policy."
```

```
[root@centos ~]# ip route  
[root@centos ~]# curl http://172.17.0.2:8080/echo/ci -c route  
Kernel IP routing table  
Destination     Gateway         Genmask        Flags Metric Ref    Use  
0.0.0.0         0.0.0.0       0.0.0.0       UG    100    0      0  
172.17.0.0      0.0.0.0       255.255.0.0   U     1000   0      0  
192.168.192.0   0.0.0.0       255.255.255.0 U     100    0      0  
ens3            ens3          0.0.0.0       U      0      0      0  
[root@centos ~]# curl http://172.17.0.2:8080/echo/ci -c route
```

f) Use up command

Address	Netmask	Hardware Address	Type	Flags	Mask	Interface
192.168.1.1	255.255.255.0	00:0C:29:00:00:01	ether	BROADCAST	00:00:00:FF:FF:FF	ens3
192.168.1.254	255.255.255.0	00:0C:29:00:00:02	ether	BROADCAST	00:00:00:FF:FF:FF	ens3

g) Use of host command

```
File Edit View Search Terminal Help  
surajankal1738@fybsc-CS:~/new$ host -V  
host 9.11.3-1ubuntu1.8-Ubuntu  
surajankal1738@fybsc-CS:~/new$
```

h) Use of netstat command and Nmap command

```
surajankal1738@fybsc-CS: $ 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    LISTEN      40857  /run/user/1000/systemd/notif  
y  
unix  2      [ ]        DGRAM    LISTEN      38749  /run/user/121/systemd/notify  
unix  3      [ ]        DGRAM    LISTEN      21863  /run/systemd/notify  
unix 22     [ ]        DGRAM    LISTEN      21872  /run/systemd/journal/dev-log  
unix  2      [ ]        DGRAM    LISTEN      21889  /run/systemd/journal/syslog  
unix  8      [ ]        DGRAM    LISTEN      21893  /run/systemd/journal/socket  
unix  3      [ ]        STREAM   CONNECTED  48169  /var/run/dbus/system_bus_soc  
ket  
unix  3      [ ]        STREAM   CONNECTED  43699  /  
unix  3      [ ]        STREAM   CONNECTED  45685  /var/run/dbus/system_bus_soc  
ket  
unix  3      [ ]        STREAM   CONNECTED  41753  @/tmp/dbus-DwJBLYH6Ly  
unix  3      [ ]        STREAM   CONNECTED  44602  /  
unix  3      [ ]        STREAM   CONNECTED  42864  /  
unix  3      [ ]        STREAM   CONNECTED  43895  /run/user/1000/bus  
unix  3      [ ]        STREAM   CONNECTED  40927  /  
unix  3      [ ]        STREAM   CONNECTED  41787  /  
unix  3      [ ]        STREAM   CONNECTED  40436  /run/user/121/bus  
unix  3      [ ]        STREAM   CONNECTED  44116  /  
unix  3      [ ]        STREAM   CONNECTED  43969  /
```

FF/02

```
File Edit View Search Terminal Help  
surajankal1738@fybsc-CS: $ nmap www.google.com  
Starting Nmap 7.60 ( https://nmap.org ) at 2020-01-01 11:21  
Nmap scan report for www.google.com (172.217.166.36)  
Host is up (0.014s latency).  
Other addresses for www.google.com (not scanned):  
rDNS record for 172.217.166.36: b0071b1b7  
Not shown: 996 filtered ports  
PORT      STATE SERVICE  
25/tcp    closed  smtp  
80/tcp    open   http  
110/tcp   open   pop3  
443/tcp   open   https  
  
Nmap done: 1 IP address (1 host up) scanned in 4.84 seconds  
surajankal1738@fybsc-CS: $
```

PRACTICAL 10

AIM:- SHELL SCRIPTING

Basis 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
- #!/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

```
Echo $SHELL
tscsc@tscsc-VirtualBox: ~
```

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

```
Linux.sh [New File]
• Chmod 777 filename.sh
/filename.sh
```

```
tscsc@tscsc-VirtualBox: ~
```

vi linux.sh
chmod 777 linux.sh
./linux.sh
THIS IS LINUX!

Program to display your name

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

```
tscsc@tscsc-VirtualBox: ~
```

echo "Enter your name:"
read name
echo "My name is: \$name"

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 filename.sh
- Vi filename.sh [You can use your favorite editor to edit the script].
- chmod 777 filename.sh (for marking the script executable)
- sh filename.sh or ./filename.sh (for running the script)

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 manipulation like insertion, deletion, search, etc. With Sed, we can edit & complete files without actually having to open it.

```
tsc@tsc-VirtualBox: ~
tsc@tsc-VirtualBox: ~$ vi ubuntu.sh
tsc@tsc-VirtualBox: ~$ !ubuntu.sh
Enter your name:
Name: tsc
Name is: TSC
tsc@tsc-VirtualBox: ~
```

```
Program to find the sum of two variables
#!/bin/bash
a=100
b=25
Sum=$((a+b))
Echo "sum is $sum"
tsc@tsc-VirtualBox: ~
tsc@tsc-VirtualBox: ~$ ./filename.sh
sum is 125
tsc@tsc-VirtualBox: ~$
```

```
tsc@tsc-VirtualBox: ~
tsc@tsc-VirtualBox: ~$ vi linux2.sh
tsc@tsc-VirtualBox: ~$ chmod 777 linux2.sh
tsc@tsc-VirtualBox: ~$ ./linux2.sh
Sun is:25
tsc@tsc-VirtualBox: ~
```

```
tsc@tsc-VirtualBox: ~
tsc@tsc-VirtualBox: ~$ vi lin.sh
#!/bin/bash
sum=$((1+2))
echo "sum is:$sum"

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

- 638
- 1] Displaying partial text of file -
With Sed, we can view only part of file rather than seeing whole file.
 - 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
's' option is for searching a word
 - 5] 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 'c'

```
tcsc@tcsc-VirtualBox: $ vi lln.sh
tcsc@tcsc-VirtualBox: $ chmod 777 lln.sh
tcsc@tcsc-VirtualBox: $ ./lln.sh so 70
sun ls:120
tcsc@tcsc-VirtualBox: $
```

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

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

```
● - n tcsc@tcsc-VirtualBox-
subjects offered in cs
datastructure
green tech
softskill
stats
calculus
computer basic
tcsc@tcsc-VirtualBox: $
```

```
● - n tcsc@tcsc-VirtualBox-
tcsc@tcsc-VirtualBox: $ vi ubuntu.sh
tcsc@tcsc-VirtualBox: $ chmod 777 ubuntu.sh
tcsc@tcsc-VirtualBox: $ ./ubuntu.sh
Enter your name:
Name?
My name is: IAVI
tcsc@tcsc-VirtualBox: $
```

054

```
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
```

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

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

055

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

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 **4** as follows.

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

```
tcsc@tcsc-VirtualBox:~$ sed -e 's/-/"/' 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
```

10
11