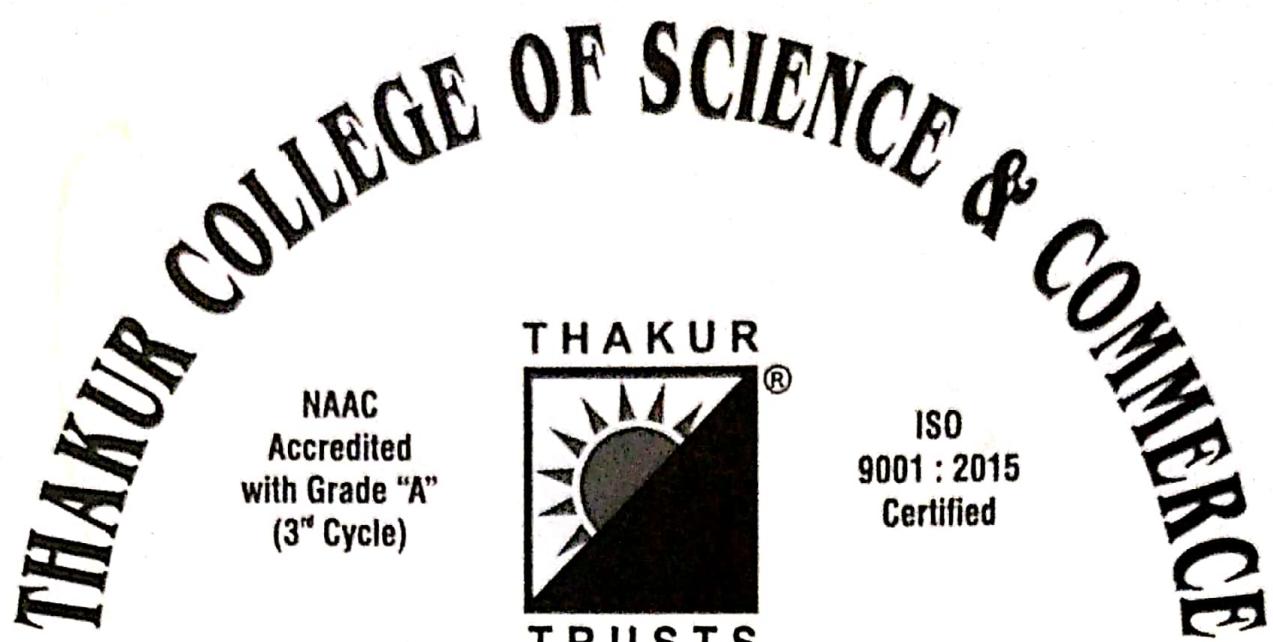


Exam Seat No. \_\_\_\_\_



Degree College  
**Computer Journal**  
**CERTIFICATE**

SEMESTER II UID No. \_\_\_\_\_

Class F.Y.BSC-CS Roll No. 1823 Year 2019-20

This is to certify that the work entered in this journal  
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Patel  
who has worked for the year 2019-20 in the Computer  
Laboratory.

  
Teacher In-Charge

Head of Department

Date : \_\_\_\_\_

Examiner

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## PRACTICAL No :- 1

EE

- Ans :- Q) Install your choice of Linux distribution  
A) Customize desktop environment by changing different default options like changing default background, themes, screensaver

## ⑤ Same resolution

#### ④ Time settings

Steps to Install Ubuntu  
Step 1: Install virtual base

1. *Leucosia* *leucostoma* *leucostoma* *leucostoma*

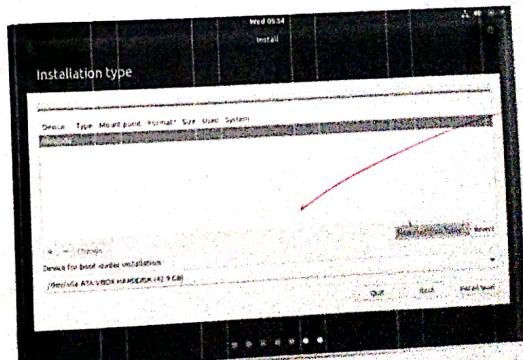
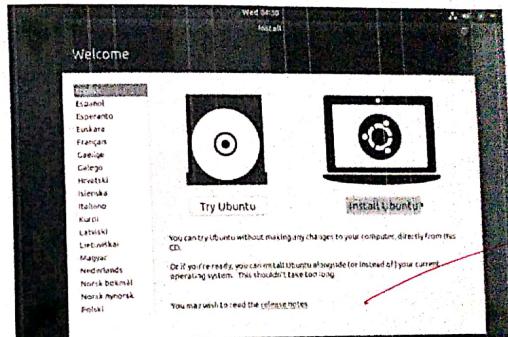
Step 2 - Open virtual box, double click the virtual box app

~~Step 3: Click now. It's a table box in the upper left corner of the virtual box column.~~

**Step 4:** Enter the name of your virtual machine. Type whole variable by its name and it should be in single quotes.

~~Step 5: Select ubuntu as the version as ubuntu should be selected by default after you set type value to line, select an ubuntu (64 bit) by proceeding~~

34



**Installation type**

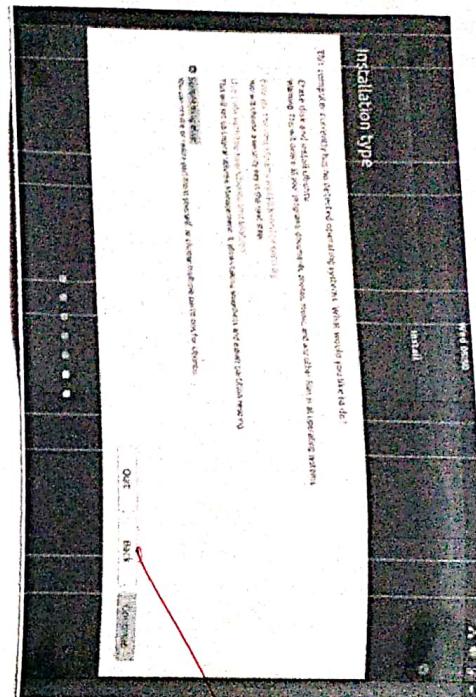
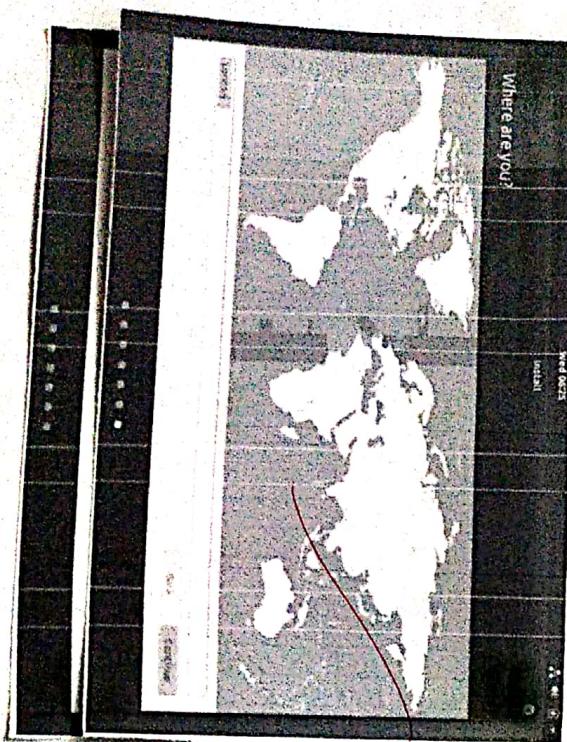
To complete a memory that has selected operating system will need to click "Install".

Create disk and virtual machine  
Virtual Machine will now appear during the process which will take some time to complete.

Please do not close the window until it is completed.

Once the process is completed you can click "Finish".

Now you have created your virtual machine.



~~Step:~~ Click next its at the bottom of the menu

~~Step:~~ Select an amount of RAM here. click and increase the amount to decrease amount of RAM will be negative when you RAM.

~~Step:~~ Then click next its at the bottom of the menu.

~~Step:~~ Create your virtual machine. hard drive space your complete hardware space which will be stored. your virtual machines program.

click next

select an amount of space to be used

click next

~~Step:~~ Make sure that your cursor is down and you can create working with it.

2) Customizing desktop environment by changing different default options like changing default background, themes, screensaver.

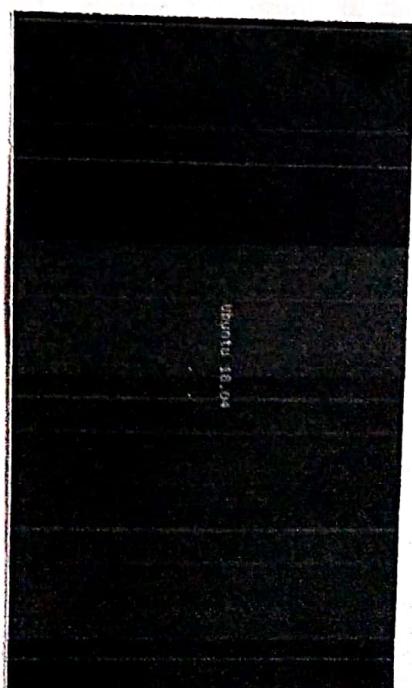
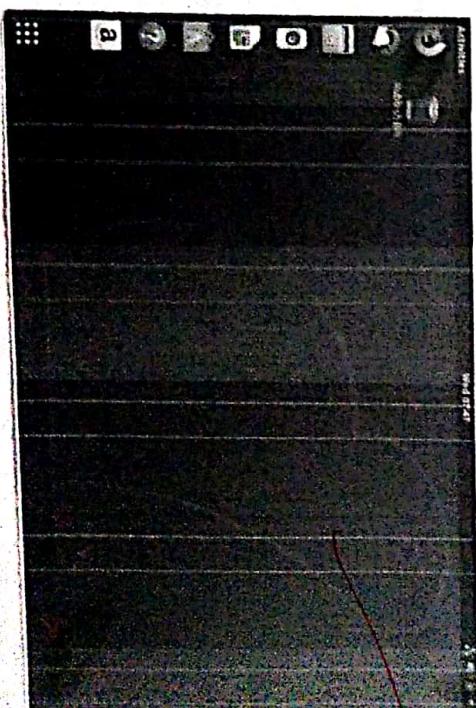
Accessing Appearance settings in Ubuntu:  
To access Appearance settings in Ubuntu, click on user menu at the top right corner, on the top menu.

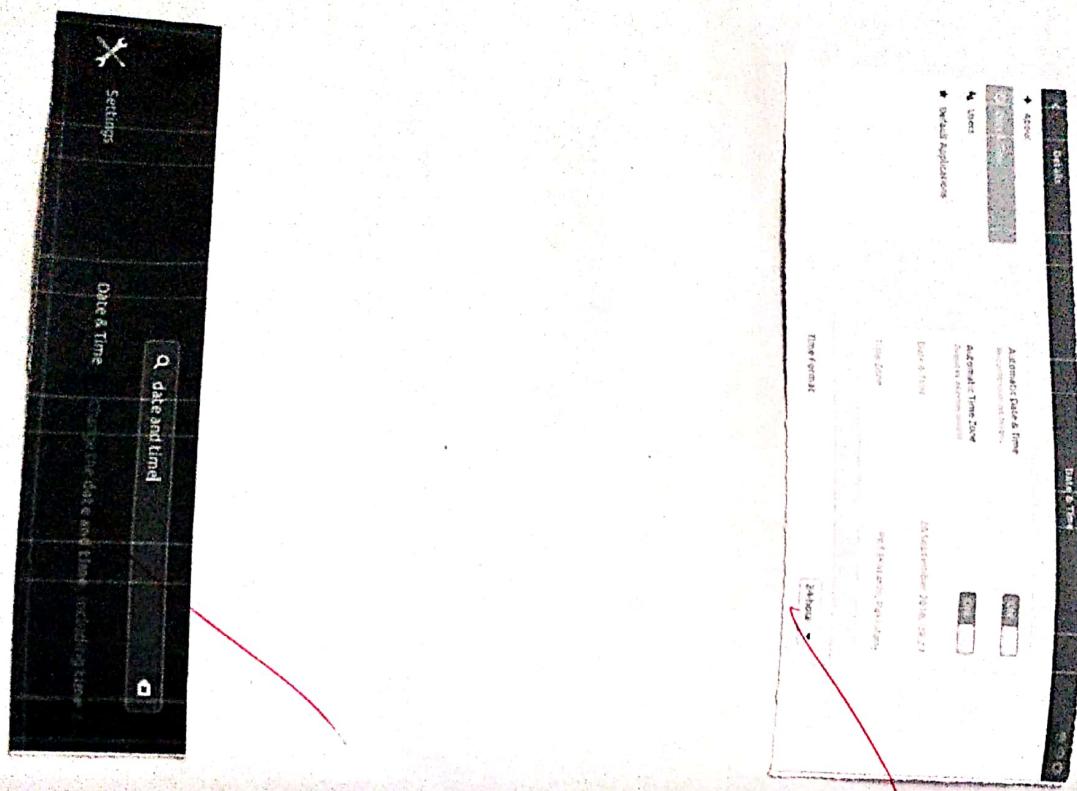
A window will appear with all setting and into personal, windows and system options. Let's first select the appearance icon.

Changing Wallpaper Picture:  
On the left side of Background Paint, you can see your current paint wallpaper.

On the right side is faint where we can select one of ubuntu wall papers. Clicking on any them brain our wallpaper will be changed right away with a fading effect.

If you want to select wallpaper from your picture folder, click the drop down menu above thumbnails where you can select them as your wallpaper.





### Changing Ubuntu theme

Ubuntu also has an option to change the entire way your computer looks.

To do that, click on the drop-down menu below the wallpaper thumbnails and contrast.

Ambiance is a light theme that looks a lot more Mac-like while Radiance is a darker brown theme used in Ubuntu by default.



3) Screen Resolution: As certain the current resolution for your desktop.

Change the size of position of the screen. You can change how big things appear on the screen by changing the screen resolution.

You can change which way up things appear by changing the orientation.

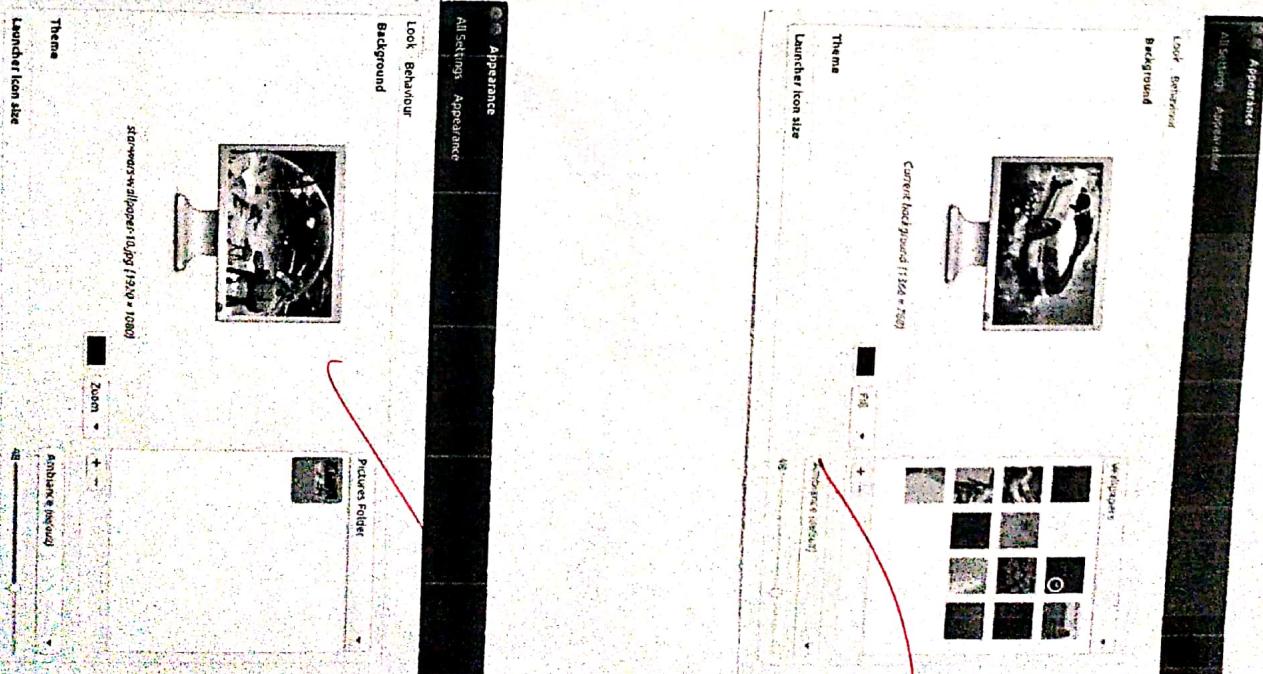
Click the icon on the very right of the menu bar and select System Settings menu bar.

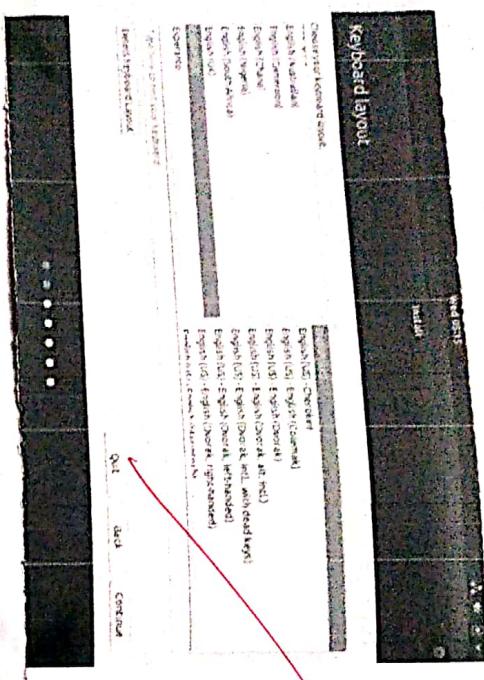
### Open Screen Display

If you have multiple displays and they are not mirrored you can have different settings on each display. Select a display in the previous area.

Select your desired resolution and orientation.

Click Apply. The new setting will be applied after 30 seconds before switching back. That way, if you can't see anything with the new.





4) Time settings change the time zone of your system (say New York time). If you are currently in Indian time, then do the display time change.

After setting the time change, change the time zone back to your local time zone.

*Bg  
10/10/12*

## PRACTICAL NO. 2

Ques: Installing and running software

a) Install gcc package, verify that it runs and then remove it.

Steps:  
 Step 1: Just type 'gcc -v' to know if you have already installed gcc compiler or not.  
 If the output is blank 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 let's uninstall gcc compiler.

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

Type: cd build/gcc  
sudo make uninstall

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

10/10

Ans. Utilization of grep man command.

Documented in documentation from the terminal.

- a) Building info documentation from the command line.
- ↳ bring up the info page from the grep command bring up the usage section.
- To fetch info about any command Info command is used.
- Info command is used to get the syntax of info command is "info [command name]".

We are going to find the info about the 'grep' command.

Open the terminal (Alt + Alt + T) and type:

info grep.

After typing the command following output will be displayed on the screen.

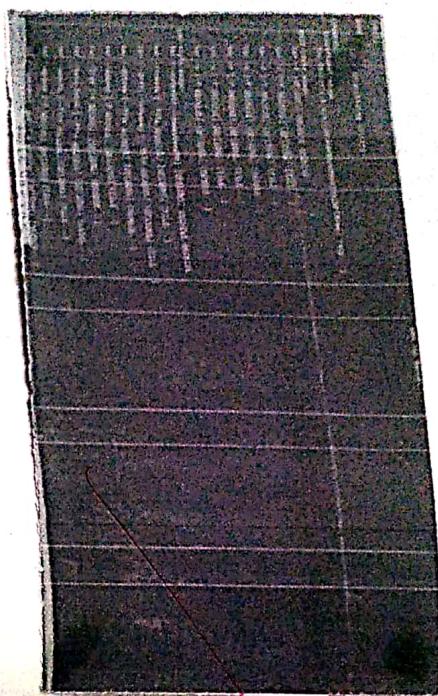
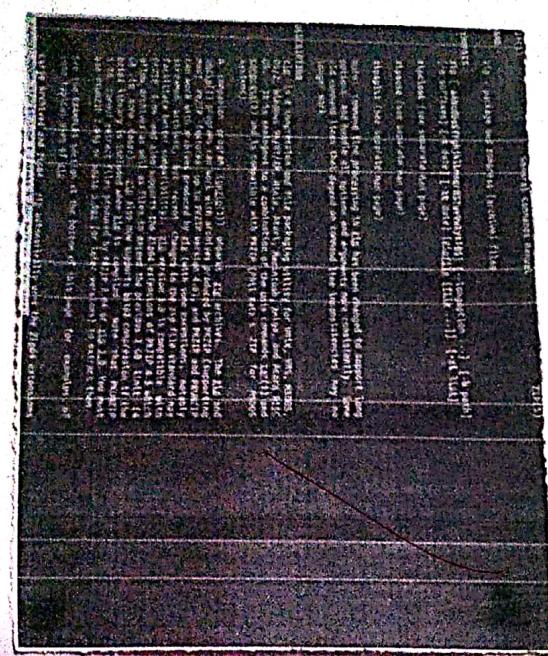
You can also scroll through pages using (Space up) & (backspace = down) keys.

Another one summarized form of showing info is the man command, the command is same as 'info' but requires data.

b) Finding man pages from the end line  
bring up the man page in command  
shell, down see the example section.

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 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 zip'~~  
~~'man tar'~~



d) Finding man pages by the sections  
from the end lines bring up the man  
page from the point lib function  
pages from the parts sections are library  
cubits manual page sections are library  
functions found.

→ The number corresponds to the section  
of the manual page in form: 1 to user  
command while 8 to sysadmin stuff.  
The man page for man itself contains  
it and list the std are:

There are certain terms that have different  
names w.r.t. different sections (e.g.: 'print'  
as an command appears w.r.t. section 1 as  
an stdlib function appears in section 3,  
in cases like that you can pass the  
section no. to the man before the page  
name to choose which one you want  
or we ran a ~~to~~ show every matching  
page in a man.

Section	Description
1	User commands
2	System calls (APIs)
3	Library functions and definitions
4	File formats and conventions
5	Commands
6	Miscellaneous
7	Distribution-specific sections (not standard)
8	System administration tools and Daemons

Section	Description
1	Standard sections in the manual database
2	User commands
3	System calls (APIs)
4	Library functions and definitions
5	File formats and conventions
6	Commands
7	Miscellaneous
8	Distribution-specific sections (not standard)

e) Command-line helps list the available  
options for mkdir command - how can  
you do this?

\$ mkdir -na = bx & directory name

You can tell what sections a term falls  
in with 'man -k' (equivalent to aptap)  
command it will do a ~~subsetting~~ search  
matches the need to use "terms to look  
it.

10/02

Ques :- Command line operations :

a) Install newpackage on your system

`sudo apt-get install [package name]`

b) Remove the package installed

`sudo apt-get remove [package name]`

c) Find the passwd file using find command

```
# find / - name passwd
./usr/share/doc/nes-ldap-2.5.3/pamd/passwd
./usr/lib/pamd/passwd
./etc/pamd/passwd
```

Find the directory passwd file under root and one level down

```
# find / - maxdepth 2 - name passwd
./etc/passwd
```

Find the passwd file under user and 2 level down

```
# find / - maxdepth 3 - name passwd
```

- /usr/bin/passwd
- /etc/pam.d/passwd
- /etc/passwd

Find the passed file b/w sub directory  
level 2 & 4.

```
# find -maxdepth 3 -maxdepth 5 -name
• /usr/bin/passwd
• /etc/pam.d/passwd
```

d) Create a symbolic link for the file you  
found in steps.

```
# ln -s file1 file2
```

c) Create an entry file example.txt & move  
it to /tmp directory using relative  
pathname.

```
# touch example.txt
```

~~ln~~

~~mv~~

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:  
# whence ls

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

# whence ps

```
ps: /bin/ps/usr/share/man/man1.ps.1.gz
```

# whence bash

```
bash: /bin/bash/etc/bash.bashrc/usr/share
      man/man1/bash.1.gz
```

~~ls~~



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

Ans:

```
gzip filename.txt
Bzip2 filename.txt
```

5) Use diff command to create diff of two files diff filename1 filename2

Ans: diff filename1 filename2

```
diff filename1 filename2
10001,10002
```

4. Archiving and backup the work

directory using tar, gzip and bzip2

commands.

Ans: gzip filename.txt

```
gzip filename.txt
```

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

6. Use patch command to patch a file.  
And analyze the patch using patch  
command again.

```
patch -p0 < filename
patch: /tmp/patch-10001: patching file filename
patch: 10001,10002
```

~~10001~~

# PRACTICAL NO. 6

**8.1 Environment**

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AIM: Use command

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

Ans what command to whoami

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

Ans: who command & whoami

```
jeba@jeba-VirtualBox:~$ who
jeba@jeba-VirtualBox:~$ who
jeba          tty7  2020-01-15 20:32 (:0)
jeba@jeba-VirtualBox:~$ whoami
jeba
jeba@jeba-VirtualBox:~$ who
jeba          ttym1  2020-01-15 20:30
jeba@jeba-VirtualBox:~$ ■
```

```
jeba@jeba-VirtualBox:~$ w
20:35:04 up 4 min, 1 user,  load average: 0.76, 0.79, 0.38
USER      TTY      FROM          LOGIN   IDLE    JCPU   PCPU WHAT
jeba      ttym1 :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          LOGIN   IDLE    WHAT
jeba      ttym1 :0          4:38   /sbin/upstart --user
jeba@jeba-VirtualBox:~$ w -h
jeba      ttym1 :0          20:32   4:44   8.67s  0.33s /sbin/upstart
20:36:12 up 5 min, 1 user,  load average: 0.41, 0.69, 0.37
USER      TTY      LOGIN@  IDLE    JCPU   PCPU WHAT
jeba      ttym1 :0          20:32   9.60s  0.33s /sbin/upstart --user
```

b) Display /etc/shadow file using cat command and understand the importance of shadow file. Note it is different than passwd file.

As with, the passwd file, each file in the shadow file is also separated with ":" characters, and are of follows:

Username, up to 8 characters. One colon separates usually all lowercase. A direct match to the username, up the /etc/passwd file.

Password: 13 characters encrypted. A blank entry (eg.: :) indicates a password is not required. To log in usually a bad idea and a "#" entry (eg.: #) indicates the account has been disabled.

The number of days (since January 1, 1970) since the password was last changed

The number of days before password may be changed (0 indicates it may be changed at any time).

The number of days after which password must be changed (if password unchanged, for many, many years)

The numbers of days to warn user of an expiring password (if less than a full week)

The number of days after password expiration 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

A reserved field for possible future use

```
jeb@jeb-virtualbox:~$ sudo cat /etc/shadow
root:$1$jeba$VfJLkZCQHqzXWuPQDwvZ.:0:99999:7:::
daemon:$1$jeba$99999:7:::
bin:$1$jeba$99999:7:::
sys:$1$jeba$99999:7:::
sync:$1$jeba$99999:7:::
games:$1$jeba$99999:7:::
man:$1$jeba$99999:7:::
mail:$1$jeba$99999:7:::
news:$1$jeba$99999:7:::
```

Each field in a password entry is separated with ":" colon characters, and are as follows: user name, up to 8 characters. (are - sometimes usually all lowercase case)

An "x" in the password field. Passwords are stored in the " /etc/shadow" 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 id.

Full name of user. I'm not sure what the maximum length for this field is, but try to keep it reasonable. (usually 80 characters)

User's home directory. (usually home) username. All user's password files, web pages, mail, game audio, etc. will be stored here.

User "shell account". Often set to "/bin/bash", to provide access to the bash shell (my personal favorite shell).

Explains different ways of getting commands his forces, shows the uses of previous and concerted command without hypering it.

his last  
line number

```
jebab@jebab-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 pidof
15 clear
16 history
jebab@jebab-VirtualBox:~$ 13
WHO -L
LOGON tty1 2020-01-15 20:36
jebab@jebab-VirtualBox:~$ █
```

c) Get your current working directory.

A.3

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

Caecum shell: so most commonly used  
caron commands.  
~~Alas command instructs the shell to replace  
are strong with another string while executing  
the commands:~~

The commands

## Word Navigator

### 13 PRACTICAL No :- 07

Key

Action

52

Aim: Linux editor: vi  
i) Create, read, edit, search and navigate.

a) Create, read & edit a file in editor.

i) Creating a file.

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

ii) Modifying the file:

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

iii) Search in a file:

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

iv) Navigate:

Movement in few directions.

key ↎

ctrl + d

ctrl + u

Scrolled half page backward.

ctrl + b

Scrolled half page forward.

ctrl + f

Scrolled forward.

ctrl + p

Scrolled backward.

key ↎

ctrl + l

Scrolled to end of line.

ctrl + g

Scrolled to beginning of word.

ctrl + w

Scrolled back to beginning of word.

ctrl + h

Scrolled to end of word.

ctrl + n

Scrolled to first character of line.

ctrl + p

Scrolled to last character of line.

ctrl + r

Scrolled to previous character.

ctrl + b

Scrolled to next character.

ctrl + f

Scrolled to previous line.

ctrl + b

Scrolled to next line.

ctrl + n

Scrolled to previous page.

ctrl + p

Scrolled to next page.

ctrl + u

Scrolled to previous page.

ctrl + d

Scrolled to next page.

ctrl + l

Scrolled to previous page.

ctrl + r

Scrolled to next page.

ctrl + b

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Scrolled to next page.

ctrl + r

Scrolled to previous page.

ctrl + b

Scrolled to next page.

ctrl + f

Scrolled to previous page.

ctrl + n

b) Show all essential commands like `ls`, `grep`, `highlight`, show line numbers, replace

c) Replace

Syntax: `:%s/old/word/gc` word to be replaced / new word

Syntax: `:g/word to be replaced/s!/new word/gc`

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

Hello  
This is my Linux example  
Well done  
This is Vi Editor  
Thank You

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

Hello  
This is my Linux example  
Well done  
This is Vi Editor  
Thank You

53

d) highlight

Use -set hlsearch

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

Hello  
This is our Linux example  
Well done  
This is Vi Editor  
Thank you

e) Show the line number

Use `set nu`

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

Hello  
This is our Linux example  
Well done  
This is Vi Editor  
Thank you

f) Show the line number

Use `set nu`

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

Hello  
This is our Linux example  
Well done  
This is Vi Editor  
Thank you

10/10

# AIM:- Linux Security

## PRACTICAL No:- 08

54

- a) Use of sudo to change user privileges to root.

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

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

```
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
# See the man page for details on how to write a sudoers file.

Defaults        env_reset
Defaults        mail_badpass
Defaults        secure_path="/usr/local/sbin:/usr/sbin:/usr/bin:/bin:/sbin:/usr/bin"
# Host alias specification
# User alias specification
# Cmnd alias specification
# User privilege specification
root    ALL=(ALL:ALL) ALL
```

- b) Identify operations that require sudo privileges

```
jeba@jeba-VirtualBox:~$ su user1
Password:
user1@jeba:~$ mkdir folder1
mkdir: cannot create directory 'folder1': Permission denied
user1@jeba-VirtualBox:~$ sudo mkdir folder1
[sudo] password for user1:
```

user1 is not in the sudoers file. This incident will be reported.

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

```
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 29, 2020
Password expires      : never
Password inactivates : 0
Minimum number of days between password change : 0
Maximum number of days before password change : 99999
Number of days of warning before password expires : 7
```

- d) Delete newly added user

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

**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
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

Particular No. 9

A HISTORY OF THE  
NATIONAL BANKS OF THE UNITED STATES

a) Get IP address of your machine using ifconfig

lo link encap:Ethernet brdger 00:00:27:0e:16:b8 Mask:255.255.255.255  
inet addr:10.0.2.15 brd 10.0.2.255 Mask:255.255.255.255  
inet6 addr: fe80::c0e1:53ff:fe16:b8%lo brd fe80::ff:fe16:b8 Mask:64  
Link encap:Ethernet brdger 00:00:27:0e:16:b8  
RX packets:133 errors:0 dropped:0 overruns:0 frame:0  
TX packets:133 errors:0 dropped:0 overruns:0 frame:0  
collisions:0 txqueuelen:1000  
RX bytes:1180 (1.1 KB) TX bytes:8518 (8.5 KB)  
  
link encap:local loopback  
inet addr:127.0.0.1 Mask:255.0.0.0  
inet6 addr: ::1/128 Scope:Host  
Link encap:Ethernet brdger 00:00:27:0e:16:b8 Mask:255.255.255.255  
inet addr:10.0.2.15 brd 10.0.2.255 Mask:255.255.255.255  
inet6 addr: fe80::c0e1:53ff:fe16:b8%lo brd fe80::ff:fe16:b8 Mask:64  
Link encap:Ethernet brdger 00:00:27:0e:16:b8  
RX packets:53240 errors:0 dropped:0 overruns:0 frame:0  
TX packets:53240 errors:0 dropped:0 overruns:0 frame:0  
collisions:0 txqueuelen:1  
RX bytes:4225072 (4.2 MB) TX bytes:4225072 (4.2 MB)

b) Get hostname of your machine

```
[1]+ Stopped ping www.google.com
```

e) Troubleshooting network using trafficmon tool

```
jeb@jeb-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     0       0      0 enp0s3  
link-local      *           255.255.0.0    U     1000  0      0 enp0s3  
jeb@jeb-VirtualBox:~$
```

```
jens@jens-VirtualBox:~$ ifconfig  
Address      HWtype      Hwaddress          Flags Mask  
10.0.2.2      ether      52:54:00:12:35:02  brd      enp0s3
```

Jeba@jeba-VirtualBox:~\$ host -v  
host 9.10.3-p4-Ubuntu  
Jeba@jeba-VirtualBox:~\$ █ I

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jeba@jeba-VirtualBox:~\$ nmap www.google.com			
		Foreign Address	State
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			
rdns record for 216.58.196.68: bon05s11.in-f4.1e100.net			
Not shown: 998 filtered ports			
PORT      STATE SERVICE			
80/tcp     open  http			
443/tcp    open  https			

```
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): 2404:6000:400
rDNS 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
jeba@jeba-VirtualBox:~$
```

## Echo \$SHELL

PRACTICAL No:- 10

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Aim :- Shell scripting

Basic of shell scripting

a) To get on shell, you need to start a terminal  
Vi filename.sh  
echo "This is Linux!"

b) To see what shell you have, run:

c) In Linux, the dollar sign (\$) stands for a shell variable.

d) The echo command just outputs whatever you type in:

e) #!/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.

chmod 777 filename.sh

./filename.sh

```
root@tecetec-virtualbox:~# vi linux.sh
root@tecetec-virtualbox:~# chmod 777 linux.sh
root@tecetec-virtualbox:~# ./linux.sh
THIS IS LINUX!
root@tecetec-virtualbox:~#
```

```
root@tecetec-virtualbox:~# vi linux.sh
root@tecetec-virtualbox:~# chmod 777 linux.sh
root@tecetec-virtualbox:~# ./linux.sh
THIS IS LINUX!
root@tecetec-virtualbox:~#
```

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

### of Open terminal

- b) Navigate to the place where you want to create script using cd command
- c) Touch filename.sh [You can use yours favorite editor, to edit the script]
- d) chmod 777 filename.sh [you making the script executable]
- e) ./filename.sh [for running the script]

Program to display your name

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

```
tcc@tcc-VirtualBox:~$ chmod 777 script.sh
tcc@tcc-VirtualBox:~$ ./script.sh
Enter your name:
Hello, my name is: tcc
```

Program to find the sum of two variables

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vi filename.sh

#!/bin/bash

a=100

b=25

Sum=\$((a+b))

echo "Sum is : \$sum"

Echo

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

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

```
tcc@tcc-VirtualBox:~$ vi lin.sh
tcc@tcc-VirtualBox:~$ chmod 777 lin.sh
tcc@tcc-VirtualBox:~$ ./lin.sh
sum is:129
tcc@tcc-VirtualBox:~$
```

Sed

Sed command are Stream Editor so recent powerful utility offered by Linux system. It is mainly used for text substitution and replacement but it can perform other text manipulations like insertion, deletion, search etc. With Sed we can edit complete files without actually having to open it.

Consider the following text file

```
root@tesc-virtualbox:~# cat cs.txt
subjects offered in cs
datastructure
database management
linux
green tech
softskill
stats
calculus
computer basic
```

### 1) Displaying partial text of a file.

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

```
root@tesc-virtualbox:~# vi cs.txt
root@tesc-virtualbox:~# sed -n 3,5p cs.txt
subjects offered in cs
datastructure
database management
linux
```

### 2) Display all except last line

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

```
root@tesc-virtualbox:~# sed 3,5d cs.txt
subjects offered in cs
datastructure
green tech
softskill
stats
calculus
computer basic
```

)) Displaying partial text of a file with Sed, we can view only part of a file rather than seeing whole file.

3) Deleting a line  
in file at line number  
followed by 'd'

```
test@test-VirtualBox:~$ vi linux.sh
test@test-VirtualBox:~$ chmod 777 linux.sh
test@test-VirtualBox:~$ ./linux.sh
this is Linux
test@test-VirtualBox:~$
```

4) Search and Replacing a string  
's' option is for searching a word.

```
test@test-VirtualBox:~$ sed 's/linu/centos/g'
test@test-VirtualBox:~$ cat centos
subjects offered in cs
database management
Linux
green tech
softskill
stats
calculus
computer basic
```

4) Search and Replacing a string  
's' option is for searching a word.

```
test@test-VirtualBox:~$ sed 's/linu/centos/g' > cs.txt
subjects offered in cs
database management
Linux
green tech
softskill
stats
calculus
computer basic
```

5) Add a line after / before the matched string.  
To add a new line with some content after every pattern  
using pattern match, user option 'a'.

```
test@test-VirtualBox:~$ sed '/linu/a THIS IS Linux' cs.txt
subjects offered in cs
THIS IS Linux
database management
Linux
green tech
softskill
stats
calculus
computer basic
```

6) Add a line after / before the matched string.  
To add a new line with some content after every pattern  
match, use option 'a'.

6) Replace a string on a particular line.  
To replace a string on a particular line  
use line number with 's' option.

To add a new line with same content before every pattern match, use option ~~a~~

To add a new line with same content before every pattern match, use option ~~a~~

### 8) Appending Line

To add same content before every line with sed, use ~~\*~~ and ~~&~~ as follows.

```
test@tec-virtualbox:~$ sed '/cs/!s/"this is Linux"/"cs.txt'
"this is Linux"
subjects offered to cs
datastructure
linux
python
green tech
softskill
stats
calculus
computer basic
test@tec-virtualbox:~$
```

### 8) Appending lines

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

```
test@tec-virtualbox:~$ sed -e 's/.*/Thanks R!/ 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
```

To change a whole line with matched pattern.

To change a whole line to a new line when a search pattern matches, use option ~~i~~

To change a whole line to a new line when a search pattern matches, use option ~~i~~.

```
test@tec-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
```

*11/10/2022*