

Ubuntu (Ubuntu)

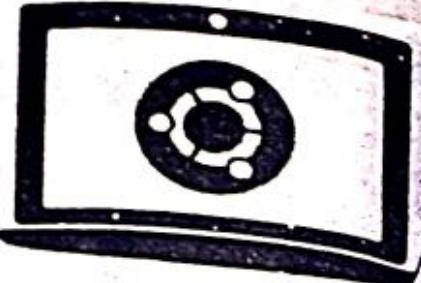
INFORMATION

English
Español
Esperanto
Euskara
Français
Gaeilge
Galego
Italiano
עברית
Slovenščina
Tajván
አማርኛ
Lietuviškai
Magyar
Nederlands
Norsk bokmål
Norsk nynorsk
Polski
Svenska

 Try Ubuntu

You can try Ubuntu without making any changes to your computer, directly from this CD.

Or if you're ready, you can install Ubuntu alongside (or instead of) your current operating system. This shouldn't take too long.

 Install Ubuntu

You may wish to read the [Ubuntu documentation](#).

Practical No.1

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AIM : Installation of UBUNTU And Background Changing.

Steps to install UBUNTU

Using A Usb Drive

Most newer computers can boot from USB. You should see a welcome screen prompting to choose your language and giving you the option to install UBUNTU or try you id from the USB.

If your Computer doesn't automatically do so, you might need to press the F12 key to bring up the boot menu, but be careful not to hold it down that cause an error message.

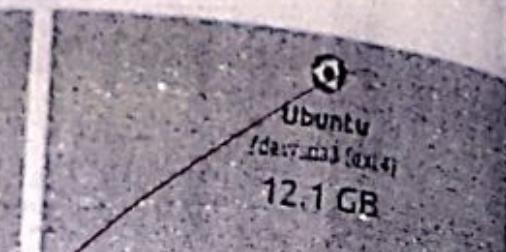
1. ~~Prepare To Install UBUNTU~~
 - . we recommend you plug your Computer into a power source
 - . you should also make sure you have enough space on for Computer to install UBUNTU
 - . We advise you to Select download updates while installing and install this third-party software now
 - . you should also stay connected to the

Install (as superuser)

Install Ubuntu alongside Windows 10

Select drive SCS1 (0,0,0) (sda) - 34.4 GB ATA VBOX HARDDISK 21.0.20

Allocate drive space by dragging the divider below.



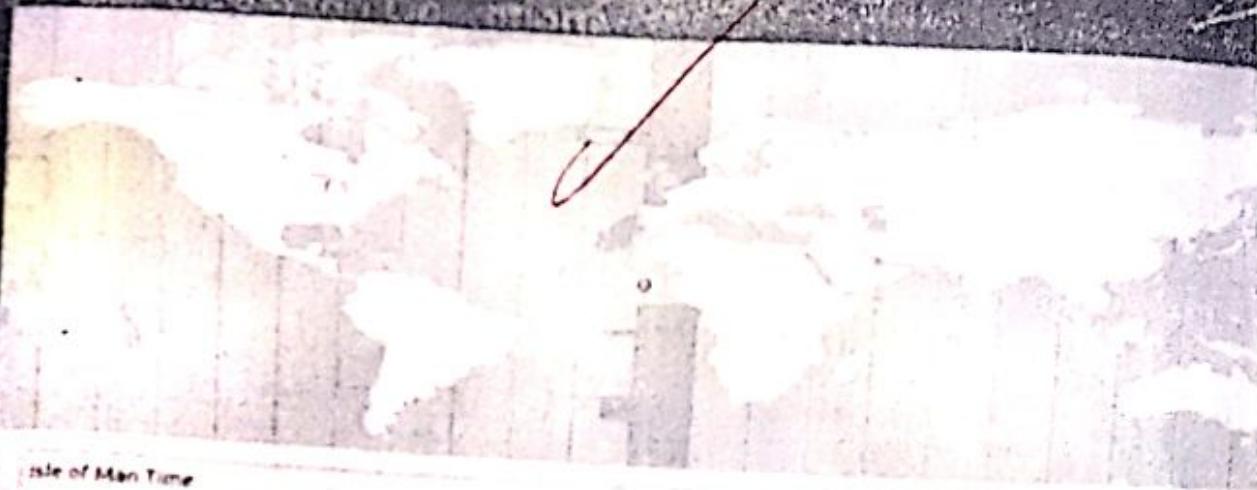
Quit

Back

Install Now

Install (as superuser)

Where are you?



Select your Location.

1. If you are connected to the internet, this should be do automatically, check your location is correct and click forward. If you are unsure and in or click on the map and we will help you it.

Select your Preferred keyboard Layout.

5. click on the language option you need. If you're not sure,
- click the 'Detect keyboard Layout' button for help.

6. Enter your login and password Details

7. Learn more UBUNTU while the system installs

8. THAT'S IT

All that's left is to restart your computer and start enjoying ubuntu.

- Customize Desktop Environment By changing Different Default options like changing Default Background Themes, Screensavers

① Accessing Appearance Settings:

- To access Appearance setting in UBUNTU, let's click on user menu at the top right corner on the top menu bar and select system setting.
- A window will pop-up with all settings divided into personal hardware and system options icons the appearance icon.

2) Changing wallpaper picture.

On the left side of background part, you can see your correct wallpaper.

- 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 effect.

③ changing UBUNTU theme

- Ubuntu also has an option to change the desktop theme, which in one click will change the entire way your complete looks.
- To do that, click on the drop-down menu below the wallpaper thumbnails and choose between Ambiance, Radiance or high contrasts.
- Ambiance is a light theme, Radiance is darker brown used in Ubuntu by ~~as~~ default.

Install (as superuser)

Keyboard layout

Choose your keyboard layout:

English (Cameroon)

English (Ghana)

English (Nigeria)

English (South Africa)

English (UK)

English (US)

Esperanto

Estonian

Faroese

Type here to test your keyboard

Detect Keyboard Layout

- English (UK)**
- English (UK) - English (UK, Colemak)
- English (UK) - English (UK, Dvorak with UK punctuation)
- English (UK) - English (UK, Dvorak)
- English (UK) - English (UK, Macintosh International)
- English (UK) - English (UK, Macintosh)
- English (UK) - English (UK, extended WinKeys)
- English (UK) - English (UK, international with dead keys)

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Continue

1993 (as superuser)

Welcome to Ubuntu

Fast and full of new features, the latest version of Ubuntu makes computing easier than ever. Here are just a few cool new things to look out for.



→ *Almond Fountain & Refining Mills*

MEZAL GÖRÜŞMELERİ

Who are you?

Your name: Lia Chen

Your computer's name: local machine

The ~~other~~ a variation it takes to other terminals.

Digitized by srujanika@gmail.com

Confirm your password:

Log in automatically

• Request my password to login

Encrypting home folder

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

Screen Resolution : A section the current screen resolution for your desktop.

Change the size or rotation of the screen you can change how big things appear on the screen by changing the rotation.

1. Click the icon on the very right of the menu bar and select System Settings.
 2. Open screen display.
 3. If you have multiply displays and they are not mirrored.
 4. Select your desired displays and they are on resolution and rotation.
 5. Click Apply. The new setting will be applied for 30 seconds.
- c) Time setting Change the time zone your system to (or New your time)
- If you are currently in Indian time . How does the display time change.
 - After nothing the time change , change the time zone back to your local time zone.
 - Just click on the clock on the top bar, and choose time and date settings once time and date window open
 - ~~Otherwise choose your time and date manually.~~
 - ~~Otherwise, choose your time zone from the map and choose Automatic~~

Practical No. 2

Aim:

- Installing and removing software
- a) Install gcc package, verify that it runs and then remove it.

Step 1: First type 'gcc -v' to know if you have already installed gcc compiler. 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 languages.

Now to uninstall gcc compiler

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

Type: cd build | gcc
sudo make uninstall

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directory.

containing executables
that

S
Solve

file
2)

and

}
2

i.a

Practical No 3

Ans: Utilization of grep man Commands.

Documentation:-

- a) finding info documentation from the command line.
Bring up the info page for the grep Command. Bringup the usage section

Ans] To find info about any command, 'info' command is used. The syntax of info command is info (Command name) we are going to find the info about the group command open the terminal (Ctrl + Alt) and type info grep command.

Open the terminal (CTRL+ALT) and type info grep after typing this command, following o/p will be displayed onto your screen.

You can also scroll through your pages using (space=up) & (backspace = down/keys). More summarized form of showing info is the man command. The command is same i.e. info : but required data

Output: This is the Info menu. A few useful Info commands 'q' quits; 'm' instant RET (a) lists all the info visits the text Commands 'n' for manual (h) starts the info etc.. tutorial

Bring up the "new" page for the
'ls' command and scroll down to
the eg. section.

6.1

Ans: To use the 'man' command simply type
'man(Commandname)'.

Now, we are going to find the manual
for ls. Continued simply type 'man ls'.

c) finding main pages by topic: what main
pages are available that documents file
compression

Ans : 'Tax', 'zijo' are same common pages
which are available for document file
Compression. Stable type : man zip
man tax
name → zip - package and compress (archive) file
synopsis → zip cloaks (see separate man page)
zipriole (" " " ")
zipsplit (" " " ")

Use → ① add → update existing entries and
add new files

② Update() → update existing entries if
they are on the file system
and add new files. If the
archive does not exist
is we can't then create a
new archive

man

3. Output : Name + ls-list directory Content

synopsis → ls [option] ... FILE

Description

-a , ... all

do not ignore entries starting
with .

-A , - - almost - all do not list implied and

-b , - - escape point c - style non-igraphic
characters

-c list entries by Columns.

-d , ... directory list directories themselves, not
their contents

④ delete (-d) → select entries in existing
archive and delete them

⑤ Copy (-v) → select entries in an existing
archive and copy them to a new archive

⑥ finding man pages by section from the
ord lines, bring up the man pages for
the library function found.

Ans : The ~~num~~ number corresponds to what section
of the manual page from ' is user
~~com~~ command while & is mine stuff .

manual section

The standard section of the manual
in

- 1) User Commands
- 2) System calls
- 3) C library functions
- 4) Devices and special files
- 5) File formats and conventions
- 6) Names of c - al
- 7) miscellaneus
- 8) System administration tools.

Distribution customize the manual section
to their which after include it additional
sections -

There are certain terms that have
different page in different section
(eg: 'printf') as a command appears
in section as a 'lib' function in
section S) in case like that you
can poss the section as

\$ man + 1 printf
\$ man - 3 printf
\$ man - a printf
\$ man - k printf

printf (+) - format and print data

printf (.S(P)) - write formulated output

printf (BP) - print section n terms
fous with you can + tell
what section talk in

you can tell what section a term
falls in with command-line help list
the available option for the mRdir
command how can you do this?

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Practical NO.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 passwd
· / user / share / doc / nss - / dop - 253 / pam - d / password
· / user / bin / password
· / etc / pam - d / password
· / etc / password -
```

Find the password file under root and 2 level down

```
# find / -maxdepth 3 -name password
· / user / bin / password
· / etc / pam - d / password
· / etc / password
```

Find the password file b/w sub directories level 2

```
# find -maxdepth 3 max. -name password
```

• /usr/bin/passwd
• /etc/pam.d/passwd

d) Create a symbolic link to the file you found in next step.
ln -sfile Lfile2

e) Create an empty file example.txt move it to tmp directory using of relative pathname.

touch example.txt
mv example.txt /tmp

f) delete the file moved to /tmp in previous step by absolute method.
rm /tmp/example.txt

g) find the location of ls, ps - bash Commands where is ls.

ls : /bin/[ls]us8/share/man/man1/ls.1g
where is ls

ps : /bin/usr/share/man/man1/bin/ps/wrg/share/man/ps.1g
where is ps

bash : /bin/bash/etc/bash.bashrc/us8/share/gman/man1/bash/g2
where is bash

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1)

Practical No.5

File operations

Explore mounted file system on your Computer
 Ans : df -k

```
jeba@jeba-VirtualBox:~$ df -k
Filesystem      1K-blocks   Used Available Use% Mounted on
udev              494436      0   494436  0% /dev
tmpfs             102416   3676   98740  4% /run
/dev/sda1       7092728 3383372 3326024 51% /
tmpfs             512076    216   511860  1% /dev/shm
tmpfs               5120      4   5116  1% /run/lock
tmpfs             512076      0   512076  0% /sys/fs/cgroup
tmpfs             102416     48   102368  1% /run/user/1000
jeba@jeba-VirtualBox:~$
```

~~what are the different ways of exploring mounted file system on linux.~~

```
jeba@jeba-VirtualBox:~$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs (rw,nosuid,relatime,size=494436k,pr_inodes=123609,mode=755)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,noexec,relatime,errors=remount-ro,data=ordered)
/dev/sda1 on / type ext4 (rw,relatime,errors=remount-ro,data=ordered)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5126k)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,release_agent=/lib/systemd/systemd-cgroups-agent,name=systemd,nsroot=/)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpuacct,nsroot=/)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_cls,net_prio,nsroot=/)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids,nsroot=/)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer,nsroot=/)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpuacct,nsroot=/)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices,nsroot=/)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory,nsroot=/)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio,nsroot=/)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event,nsroot=/)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb,nsroot=/)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct)
hugetlbfs on /dev/hugepages type hugetlbf (rw,relatime)
```

③ Copying text from files
→ cp command, mv command

```
jebadjeba-VirtualBox:~$ ls
Music    Public    Videos
Desktop  Downloads Pictures Templates
Documents examples.desktop  jeb
jebadjeba-VirtualBox:~$ cd jeb
jebadjeba-VirtualBox:~/jeb$ cat .gg.txt
cat: .gg.txt: No such file or directory
jebadjeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jebadjeba-VirtualBox:~/jeb$ cat >gg.txt
welcome
Linux
^C
jebadjeba-VirtualBox:~/jeb$ touch dd.txt
jebadjeba-VirtualBox:~/jeb$ ls
dd.txt  gg.txt
jebadjeba-VirtualBox:~/jeb$ cp gg.txt dd.txt
jebadjeba-VirtualBox:~/jeb$ cat gg.txt
welcome
Linux
jebadjeba-VirtualBox:~/jeb$ cat dd.txt
welcome
Linux
jebadjeba-VirtualBox:~/jeb$
```

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

4) Archiving and backup the work directory using
to gzip and bzip 2 commands.
→ gzip .filename .txt
→ bzip filename.txt

```
jeba@jeba-VirtualBox:~/jeb$ bzip2 ss.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat ss.txt.bz2
BZh91AY&SY'♦[■]♦[■]
'JewSS♦[■]♦[■] jeba@jeba-VirtualBox:~/jeb$ gzip dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt.gz
♦[■]♦[■]d.txt+O♦I==M====+♦[■]♦Xzjeba@jeba-VirtualBox:~/jeb$ █
```

- Use diff Command to create diff of two files
 → diff filename , filename2.

```
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat >aa.txt
hello world
^C
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
this is linux^C
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
1do
< hello world
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
this is Linux
^C
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
1c1
< hello world
---
> this is Linux
jeba@jeba-VirtualBox:~/jeb$ gzip aa.txt
jeba@jeba-VirtualBox:~/jeb$ gzip bb.txt
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt.gz bb.txt.gz
Binary files aa.txt.gz and bb.txt.gz differ
```

- Username, up to 8 characters. Case-sensitive usually all lowercase. A direct match to the username.
- Password, 13 character encrypted. A blank entry (e.g. ::), 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 10 indicates it may be changed at my time.
- The number of days of warn user of an expiring password 17 for a full week
- The number of days after password expires the account is disabled is disabled
- The number of days since January 1, 1970 that account has been disabled
- A reserved field for possible future use.

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

• Username upto 8 characters , case sensitive, usually all lowercase

• An 'x' in the password field . Password are stored in the "/etc/shadow" file

• Numeric user id is assigned by the "adduser" script. This 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 of user.

• full name of user . I'm not sure what the maximum length for this field is , but try to keep it reasonable (under 30 characters)

• User's home directory . Usually /home/username (eg. /home/lsmithj). All user's personal files web pages , mail forwarding etc. will be stored here

• User shell account " after set to "/bin/bash" to provide access to the bash shell (my personal favourite shell) .

```
jeba@jeba-VirtualBox:~$ sudo cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
```

- c) Get your current working directory
Ans - pwd

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

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

→

```
jeba@jeba-VirtualBox:~$ history
 1 who
 2 whoami
 3 who -l
 4 clear
 5 w
 6 w -s
 7 w -h
 8 w -f
 9 clear
10 cat /etc/shadow
11 sudo 'cat /etc/shadow
12 clear
13 sudo cat /etc/passwd
14 pwd
15 clear
16 history
jeba@jeba-VirtualBox:~$ !3
who -l
LOGIN    ttty1      2020-01-15 20:30
jeba@jeba-VirtualBox:~$
```

Create alias to most commonly used commands
 Alias command instantiates the shell to replace one string with another string while executing the commands
 And - alias label = "Command".

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

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Practical No. 7

- i) Create, modify, search and navigate a file in editor
- ii) creating a file
To create a file on the terminal type
vi followed by filename.
- iii) modifying the file:
To modify a file, on the vi editor type 'o'
- iv) search in a file
To find a word (forward search)
press / followed by a word to search
- v) Navigate:
Movements in four directions.

key
K
J
h
l

Action
moves cursor up
moves cursor down
moves cursor left
moves cursor right

v
key

b

e

w

o

.

Action

74

moves back to beginning
moves back to end of
the word

moves forward at beginning

moves to first character
of a line

move to the end of line.

Scolling

key

ctrl + f

ctrl + b

ctrl + d

ctrl + v

Action

scroll forward

scroll backward

scroll half page

scroll half page backward.

b) Learn all essential commands like search
replace highlight show line numbers.

i) Replace.

syntax : : / g / word to be replaced / s / new
word / gc

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

I

:j/./s//our/qs
```

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

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

ii) ~~High~~ light
Use set hi search.

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

iii) Show the line number
Use set nu

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

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Practical - 8

LINUX SECURITY

- a) Use of sudo to change user privileges to root create on user named user1

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

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

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

- b) Identify operation 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) modify expiration date for new user using password aging.

Modify expiration date for new user using password ageing

```
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 20, 2020
Password expires      : never
Password inactive     : never
Account expires        : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
```

```
jeba@jeba-VirtualBox:~$ sudo chage user1
Changing the aging information for user1
Enter the new value, or press ENTER for the default

    Minimum Password Age [0]: 100
    Maximum Password Age [99999]: 200
    Last Password Change (YYYY-MM-DD) [2020-01-20]: 2020-01-21
    Password Expiration Warning [7]: 5
    Password Inactive [-1]:
    Account Expiration Date (YYYY-MM-DD) [-1]: 2020-01-31

jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change      : Jan 21, 2020
Password expires           : Aug 08, 2020
Password inactive          : never
Account expires             : Jan 31, 2020
Minimum number of days between password change : 100
Maximum number of days between password change : 200
Number of days of warning before password expires : 5
```

- F :- Expiration Date

- m : minimum number of days before password changed
- M : number of days password is valid
- I : Account inactive
- w : Number of days of working before a password changes is required

d) Delete newly added user

```
jeba@jeba-VirtualBox:-$ sudo chage -E 25/01/2020 -m 10 -M 90 -I 30 -W 30 user1
jeba@jeba-VirtualBox:-$ sudo chage -l user1
Last password change : Jan 21, 2020
Password expires      : Apr 28, 2020
Password inactive     : May 20, 2020
Account expires        : Jan 01, 2022
Minimum number of days between password change : 10
Maximum number of days between password change : 90
Number of days of warning before password expires : 30.
jeba@jeba-VirtualBox:-$
```

Jeba

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

Practical - 9

Network Management

a) Get IP address of your machine using

```
jeba@jeba-VirtualBox:~$ ifconfig
enp0s3      Link encap:Ethernet HWaddr 08:00:27:0e:6b:69
            inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
            inet6 addr: fe80::c0cd:53a0:d5a3:848e/64 Scope:Link
              UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
              RX packets:2 errors:0 dropped:0 overruns:0 frame:0
              TX packets:73 errors:0 dropped:0 overruns:0 carrier:0
              collisions:0 txqueuelen:1000
              RX bytes:1180 (1.1 KB) TX bytes:8518 (8.5 KB)

lo          Link encap:Local Loopback
            inet addr:127.0.0.1 Mask:255.0.0.0
            inet6 addr: ::1/128 Scope:Host
              UP LOOPBACK RUNNING MTU:65536 Metric:1
              RX packets:53240 errors:0 dropped:0 overruns:0 frame:0
              TX packets:53240 errors:0 dropped:0 overruns:0 carrier:0
              collisions:0 txqueuelen:1
              RX bytes:4225072 (4.2 MB) TX bytes:4225072 (4.2 MB)
```

b) Get hostname of your machine

Use ping to check the network connectivity to remote machines

```
jeba@jeba-VirtualBox:~$ ping www.google.com
PING www.google.com (172.217.31.196) 56(84) bytes of data.
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=1 ttl=54 time=97.8 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=2 ttl=54 time=82.0 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=3 ttl=54 time=84.8 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=4 ttl=54 time=87.1 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=5 ttl=54 time=93.5 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=6 ttl=54 time=86.9 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=7 ttl=54 time=98.0 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=8 ttl=54 time=90.9 ms
^Z
[1]+  Stopped.                  ping www.google.com
jeba@jeba-VirtualBox:~$
```

5) Use ping to check the network connectivity to remote machines

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

6) Use of dig Command

```
jeba@jeba-VirtualBox:~  
jeba@jeba-VirtualBox:~$ dig www.google.com  
;; <>> DLG 9.16.3-P4-Ubuntu <>> www.google.com  
; global options: +cmd  
;; Got answer:  
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 52068  
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 4096  
; QUESTION SECTION:  
www.google.com. IN A  
;; ANSWER SECTION:  
www.google.com. 91 IN A 172.217.166.100  
;; Query time: 152 msec  
;; SERVER: 127.0.1.1#53(127.0.1.1)  
;; WHEN: Mon Jan 20 22:46:06 IST 2020  
;; MSG SIZE rcvd: 59  
jeba@jeba-VirtualBox:~$
```

D) Troubleshooting network using traceroute, route commands

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e) Troubleshooting network using traceroute, route command

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

f) Use of arp command

```
jeba@jeba-VirtualBox:~$ route
Kernel IP routing table
Destination     Gateway         Genmask        Flags Metric Ref    Use Iface
default         10.0.2.2      0.0.0.0       UG    100    0        0 enp0s3
10.0.2.0        *              255.255.255.0 U        100    0        0 enp0s3
link-local      *              255.255.0.0   U        1000   0        0 enp0s3
jeba@jeba-VirtualBox:~$
```

g) Use of host Command

g) Use of host command

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

b) Use of netstat Command and Nmap Command.

jeba@jeba-VirtualBox:~					
netstat					
active Internet connections (w/o servers)					
Proto Recv-Q Send-Q Local Address Foreign Address State					
Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State
unix	2	[]	DGRAM	42149	/run/user/1000/system
dnotify	2	[]	DGRAM	9694	/run/systemd/journal/
syslog	16	[]	DGRAM	9695	/run/systemd/journal/
dev log	7	[]	DGRAM	9704	/run/systemd/journal/
socket	3	[]	DGRAM	9684	/run/systemd/notify
unix	3	[]	STREAM	44042	@/tmp/dbus-CymTeI7AQG
unix	3	[]	STREAM	43331	@/tmp/dbus-CymTeI7AQG
unix	3	[]	STREAM	42988	@/tmp/dbus-CMGGc6G7PS
unix	3	[]	STREAM	42690	@/tmp/dbus-CMGGc6G7PS
unix	3	[]	STREAM	13242	/run/systemd/journal/
stdout	3	[]	STREAM	CONNECTED	43113
stdout	3	[]	STREAM	CONNECTED	43013
stdout	3	[]	STREAM	CONNECTED	42935

```
jeba@jeba-VirtualBox:~$ nmap www.google.com
Starting Nmap 7.01 ( https://nmap.org ) at 2020-01-20 22:51 IST
Nmap scan-report for www.google.com (216.58.196.68)
Host is up (0.644s latency).
Other addresses for www.google.com (not scanned): 2404:6800:4007:811::2004
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:~$
```

90%
over

SHELL SCRIPTING

Basics of Shell scripting

- a) To get a shell, you need to start a terminal
- b) To see what shell you have, run;
- c) In linux ; the dollar sign (\$) stands for shell variable.
- d) echo command just returns 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`

Echo shell

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

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

```
tcsc@tcsc-VirtualBox:~  
#!/bin/bash  
echo "THIS IS LINUX!"
```

"linux.sh" [New File]

- chmod 777 filename.sh
- ./filename.sh

```
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:~$
```

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 command -vi.
- c) Touch file name.sh
- d) vi filename.sh

f) sh filename.sh or ./filename.sh (for B11
executing
+ re script)

Program to display your name

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

```
Echo "Enter your name:"
```

```
Read name
```

```
Echo "My name is: $name".
```

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

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

Program to find the sum of two variable

vi filename.sh

#!/bin/bash

a=100

b=25

sum=\$((a+b))

Echo "Sum is : \$sum"

```
tcsc@tcsc-VirtualBox: ~
#!/bin/bash
a=100
b=25
sum=$((a+b))
echo "Sum is:$sum"
```

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

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

```

@tcsc-VirtualBox: ~
sh
+${2})
sum ls:$sum"
"lin.sh" 3 lines, 46 characters

```

```

tcsc@tcsc-VirtualBox:~$ vi lin.sh
tcsc@tcsc-VirtualBox:~$ chmod 777 lin.sh
tcsc@tcsc-VirtualBox:~$ ./lin.sh 50 70
sum is:120
tcsc@tcsc-VirtualBox:~$ █

```

Sed Command or Stream Editor is very powerful utility offered by Linux system. It is mainly used for text substitution find & replace but it can perform other text manipulations like insertion, deletion, search etc. with sed , we insertion, deletion, search ,etc . with sed we can edit complete files without actually having to open it

Consider the following text file

- 6) Add a line after I before the matched string to add a new line with some content after every pattern match

use option 'a'

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

To add a new line with Some content before every 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) 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
```

⑨ Appending lines
 To add some content before
 line with sed, use * and & every
 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
```

