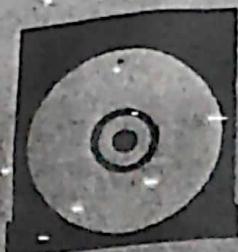
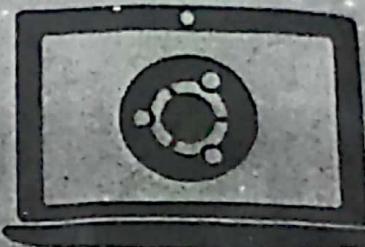


- install your choice of Linux distribution e.g:- Ubuntu & fedora & debian using USB drive
- most never computer can boot from USB you should see a welcome screen prompting you to choose your language and giving you the option to install & Ubuntu to try if from the USB
- if your computer doesn't automatically do so you might need to press the F12 key to bring up the boot menu but be carefull not to hold it down that can cause an error message
- I prepare to install Ubuntu
- we recommend you plug your computer on into power source
  - you should also make sure you have enough space on your computer to ~~to~~ install Ubuntu
  - ~~we advise you to select download update while installing and install this third party software~~
  - you should also stay connected to the internet so you can get the latest update while you install Ubuntu
  - if you are not connected to the internet you will be asked to select a wireless network if available we advise you to connect during the installing so you can ensure your machine is up to date
- 2
- allocate drive space
- use the checkboxes to choose whether you had like to install Ubuntu alongside another operating sys

Español  
Esperanto  
Euskara  
Français  
Gaeilge  
Galego  
Hrvatski  
Íslenska  
Italiano  
Kurdî  
Latviski  
Lietuviškai  
Magyar  
Nederlands  
Norsk bokmål  
Norsk nynorsk  
Polski  
Dansk



### Try Ubuntu



### Install 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.

You may wish to read the release notes:

... . . . .

Ubuntu 11.04 (Natty Narwhal)

Preparing to install 'natty'

Download updates while installing Ubuntu

This saves time after installation.

Install third-party software for graphics and Wi-Fi hardware, Flash, MP3 and other media

This software is subject to license terms included with its documentation. Some is proprietary.

Rhythmbox MP3 plugin includes MPEGLayer-3 audio decoding technology licensed from Fraunhofer IIS and Technicolor S.A.

Quit

Back

Continue

... . . . .

delete your existing operating system and  
it with Ubuntu or if you prefer never  
use choose the something else option

### 3) begin the installation

- 1) depending on your previous selection you now verify that you have chosen the way in which you would like to install Ubuntu
- 2) The installation process will begin when you click the install now button
- 3) Ubuntu needs about 7.5 GB to install so add a few extra GB to allow for files

### Select your location

if you are connected to the internet this should be done automatically check your location is correct and click forward to proceed if you are unsure of your time zone type the name of the town you are in or click on the map and we will help you find it

Tip: if you are having problem connecting to internet use the menu to the internet use the menu in the top right hand corner to select a network

This computer currently has no detected operating systems. What would you like to do?

- Erase disk and install Ubuntu

Warning: This will delete all your programs, documents, photos, music, and any other files in all operating systems.

- Encrypt the new Ubuntu installation for security  
You will choose a security key in the next step.

- Use LVM with the new Ubuntu installation

This will set up Logical Volume Management. It allows taking snapshots and easier partition resizing.

- Something else

You can create or resize partitions yourself, or choose multiple partitions for Ubuntu.

Quit

Back

Install Now

Install (as superuser)

## Install Ubuntu alongside Windows 10

Select drive: SCS1 (0,0,0) (sda) - 34.4 GB ATA VBOXHARDDISK21.1 GB

Create drive space by dragging the divider below:

12.1 GB

7 GB

12.1 GB

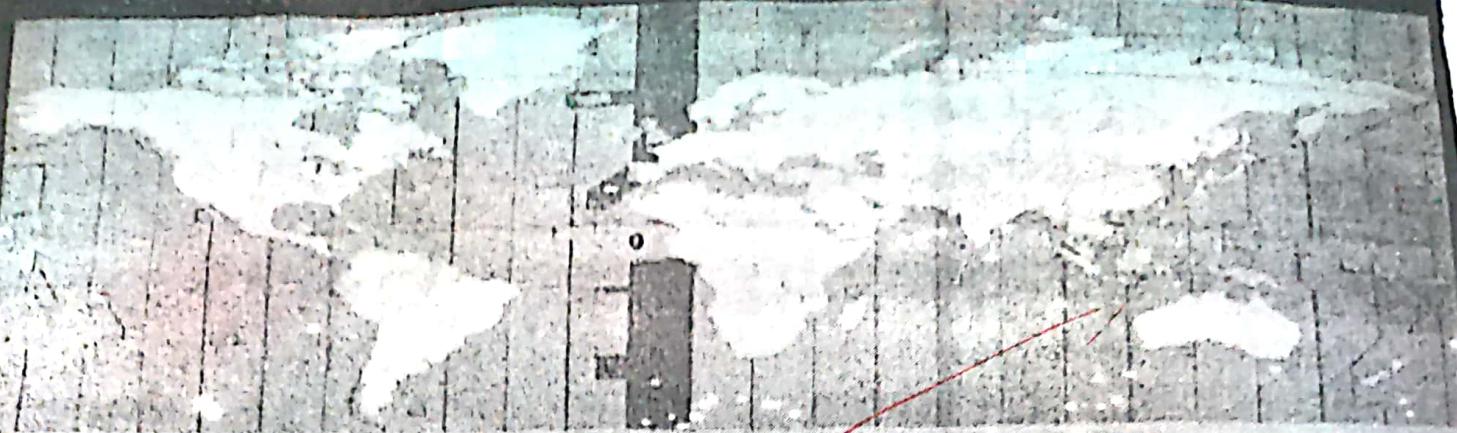
Another partition is hidden, use the advanced partitioning tool for more control

Quit

Back

Install Now

Where are you?



Isle of Man Time

Back

Continue

Install (as superuser)

## Keyboard layout

Choose your keyboard layout:

English (Cameroon)

English (Ghana)

English (Nigeria)

English (South Africa)

English (UK)

English (US)

Esperanto

Filipino

Frøese

Type here to test your keyboard

Select 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)

Back

Continue

select your preferred keyword layout

click on the language you and if you not sure  
click the detect keyword layout button for help.

Enter your to give and login and hassword  
detail

learn more about ubuntu while the system  
install

that's it

~~all the~~ left to restart your computer and  
~~start~~ enjoying ubuntu

- \* install your choice of linux distribution  
eg - Ubuntu fedora debian
- 1) customise desktop environment by changing different default option like changing background themes screens
- 2) To access of appearance setting in ubuntu let click on user menu at the top right corner on the top menu bar and select system setting
- 3) a window will pop-up with all setting divided into personal hardware and system option  
Now lets first select the appearance icon

\* Changing wallpaper pictures  
 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

if you want to select wallpaper from your picture folder click the drop down menu above thumbnail and select the picture folder

Install Mac OS X Server

## Who are you?

Your name: Lola Cheng

Your computer's name: lola-laptop

The name it uses when it talks to other computers

Pick a username: lola

Choose a password: 100000000000 | Good password

Confirm your password: 100000000000

 Log in automatically Require my password to log in Encrypt my home folder

Back

Continue

you will see all picture thumbnail wallpaper where you in your picture folder can select them as your wallpaper.

To add wallpaper that is as thumbnail where you in another folder as your wallpaper, you can select them.

To changing ubuntu theme

Ubuntu also has an option to change the desktop theme which is one click will change the entire way your computer looks.

To do that click on the drop down menu below the wallpaper thumbnail and choose Ambience Radiance or High Contrast.

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

Screen Resolution: to ascertain the current screen resolution for your desktop

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

You can change which way up things appear (if you have a rotation display) by changing the rotation system setting

- 1 click icon on very right of menu bar and select
- 2 open screen display
- 3) if you have multiple display and they are not mirrored you can have different setting on each display select a display in the preview area
  - 4) Select your desired resolution and rotation
  - 5) click ~~apply~~ the new setting will be applied for 30 second before reverting back that way if you cannot see anything with the new time setting change the time zone of your system to (or new york time)
    - if you are currently in indian time how does the displayed time change
    - after nothing time change the time zone back to your local time zone
    - just click on clock on top bar and choose time and date setting once the time and date window opens choose manually so you can change time and date manually otherwise choose your time zone from the map and choose automatic

Welcome to Office...

Castiel & Hellboy will be the latest  
version of the TV series. A fitting series  
than ever. Here's to you a few cool things  
to look out for.



skip



1:45 AM

Abed



Wednesday, 25 September 2013

September

2013

Sun Mon Tue Wed Thu Fri Sat

1 2 3 4 5 6 7

8 9 10 11 12 13 14

15 16 17 18 19 20 21

22 23 24 25 26 27 28

29 30 1 2 3 4 5

6 7 8 9 10 11 12

Time & Date Settings...

## unit - installing and removing software

a) install gcc package verify that it runs and then remove it

step 1

first type `gcc -v` to know if you have already installed gcc compiler or not if the output is blank then it means that you don't have gcc installed

step 2

g) 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 direction do have it in  
particular gcc so you can do

type cd build/gcc  
sudo make uninstall

This does not Remove everything that was  
installed but it removes major executable files  
gcc g++ etc contained in their directory

80%  
/o

a) finding into documentation from this command line bring up the into page for the grep command bring up the usage section  
to find into about above any command into command is used the syntax of into command is info (commandname): we are going to find the into about the grep command open the terminal (ctrl + alt + t) and type: into grep after typing this command following output will be displayed onto your screen

You can also scroll through pages using (Shift-up) and (Shift-down) keys

another more summarized form of showing info is the man command the command is same as info but requires data

- b) ~~c) Finding man pages from the cmd line bring up the man page for the ls command scroll down to see 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 man pages by topic what man pages are available document file compression

Ans:- There's zip are some man page which are available for document file compression simply type : man zip man

d) Finding main pages by section from the archive being an  
the main page for the `want lib` function which manual  
huge section are library function foundation

Ans:- The number corresponding to what section of the manual  
page is stuff. The main page doesn't itself explain it and  
not the std ones

There are certain terms that have different pages in  
different sections (e.g. 'printf') as a command appears  
in section 1 as a std lib function appears in section  
3 in cases like that you can pass the section no to  
want or use man -a to show every matching page in a

You can tell what section a term falls in which want  
(equivalent to apropos command)

it will do substring matches too so you need to use  
terms to limit it

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  
# find / -name passwd

/usr/share/doc/nss-2.14.1/deb-253/heimdall/passwd  
/usr/bin/passwd  
/etc/heimdall/passwd  
/etc/passwd

Find the directory passwd file under root and one level down

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

Find the passwd file under root and 2 level down

# find / -maxdepth 3 -name passwd

/usr/bin/passwd  
/etc/heimdall/passwd  
/etc/passwd

Find the hashed file b/w sub directories  
level 2 and 3

# find -maxdepth 3 -mindepth 5 -name hash  
· /usr /bin /hashed  
· /etc /home /hashed

d) Create a symbolic link to the file you found  
in last step

# ln -s file1 file2

e) Create an empty file example.txt and move it  
to

I trip directory using relative path name

# touch example.txt

# mv example.txt /tmp

f) delete the file we moved to /tmp in  
previous step by absolute method

# rm /tmp/example.txt

g) find the location of ls his bash command

# whereis ls

ls: /bin /ls /usr /share /view /man /ls.1.gz  
# whereis ls

p.s.: /bin /ls /usr /share /man /ls.1.gz

10/10  
0/10

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

```
jeba@jeba-VirtualBox:~$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs (rw,nosuid,relatime,size=494436k,nr_inodes=123669,mode=755)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,noexec,relatime,size=102416k,mode=755)
/dev/sda1 on / type ext4 (rw,relatime,errors=remount-ro,data=ordered)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,release_agent=/lib/systemd/systemd-cgroups-agent,name=systemd,nsroot=/)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset,nsroot=/)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_cls,net_prio,nsroot=/)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids,nsroot=/)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer,nsroot=/)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpuacct,nsroot=/)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices,nsroot=/)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory,nsroot=/)
cgroup on /sys/fs/cgroup/blktio 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=/)
stend-1 on /proc/sys/fs/btrfs/misctype autofs.(rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct)
getlbfs on /dev/hugepages type hugetlbfs (rw,relatime)
```

```
jeba@jeba-VirtualBox:~$ ls
Desktop  Downloads  Documents  examples.desktop  jj  Music  Pictures  Public  Templates  Videos
jeba@jeba-VirtualBox:~$ cd jeb
jeba@jeba-VirtualBox:~/jeb$ cat .gg.txt
cat: .gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat >gg.txt
welcome
Linux
2C
jeba@jeba-VirtualBox:~/jeb$ touch dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt  gg.txt
jeba@jeba-VirtualBox:~/jeb$ cp gg.txt dd.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt
Linux
jeba@jeba-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$
```

Explain mounted file system on your computer

What are the different ways of unmounting mounted file system on Linux?

3) Copying text from files

28  
Q) archiving batch the work directory using tar  
g zip and b zip command

use diff command to create of two file

use batch command to batch a file and analysis  
the batch command again

```
jeba@jeba-VirtualBox:~/jeb$ bzip2 ss.txt  
jeba@jeba-VirtualBox:~/jeb$ ls  
dd.txt ss.txt.b2z  
jeba@jeba-VirtualBox:~/jeb$ cat ss.txt.b2z  
BZh91AY&SY +[REDACTED]+[REDACTED]  
'JewSS+*[REDACTED]1 jeba@jeba-VirtualBox:~/jeb$ gzip dd.txt  
jeba@jeba-VirtualBox:~/jeb$ ls  
dd.txt ss.txt.b2z  
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt.gz  
dd.txt+[REDACTED]+M*****+[REDACTED]+XZjeba@jeba-VirtualBox:~/jeb$ █
```

```
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
1d0
< 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
```

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

which account you are logged in? how you bind out?  
who command and who am i

```
jeba@jeba-VirtualBox:~$ who
jeba          tty7        2020-01-15 20:32 (:0)
jeba@jeba-VirtualBox:~$ whoami
jeba
jeba@jeba-VirtualBox:~$ who -l
LOGIN    .tty1        2020-01-15 20:39
jeba@jeba-VirtualBox:~$ █ 780. id=tty1

jeba@jeba-VirtualBox:~$ w
20:35:04 up 4 min, 1 user, load average: 0.70, 0.79, 0.38
USER   TTY      FROM          LOGIN@  IDLE   JCPU   PCPU WHAT
jeba   tty7     :0           20:32.  4:28   8.19s  0.33s /sbin/upstart -
jeba@jeba-VirtualBox:~$ w -s
20:35:14 up 4 min, 1 user, load average: 0.60, 0.77, 0.37
USER   TTY      FROM          LOGIN@  IDLE   JCPU   PCPU WHAT
jeba   tty7     :0           4:38   /sbin/upstart --user
jeba@jeba-VirtualBox:~$ w -h
jeba   tty7     :0           20:32   4:44   8.67s  0.33s /sbin/upstart
jeba@jeba-VirtualBox:~$ w -f
20:36:12 up 5 min, 1 user, load average: 0.41, 0.69, 0.37
USER   TTY      FROM          LOGIN@  IDLE   JCPU   PCPU WHAT
jeba   tty7     20:32   5:36   9.00s  0.33s /sbin/upstart --user
```

display /etc/shadow file using cat command understand the importance of shadow file how different them password file

- cat /etc/shadow
  - as with the password file each field in the shadow file is also separated with ":" colons character, & are as follows
  - username upto and character case sensitive usually all lowercase
  - use a direct match to the Username in the /etc/password file
  - 13 characters encrypted a break entry (eg: "")
  - entry indicate the account has been disabled
  - the number of days since the password must change
  - the number of days after which password must change
  - is disable
  - the number of days to warn user of an expire password
  - the number of days since Jan 1970 that an account has been disable

a reserved field for possible future use

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

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

- username case and characters case sensitive usually all lowercase
- an "x" in the passwd field means we stored in the "etc/shadow" file
- numeric userid this is assigned by the "add user" script Unix uses this field plus the following group field to identify which file belong to the user
- numeric group id red but uses group ids in a fairly unique manner for enhanced file security usually the group id will match the user id
- full name of user im not sure what the maximum length for this field is but try to keep it reasonable
- user home directory usually /home/username all user personal file web pages mail forwarding etc will be stored here
- user shell account often set to "/bin/bash" to provide to be bash 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
lpd: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
```

get your current working directory  
pwd

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

explore different ways of getting command history from previously executed command without typing it

history ! line number

Create

```
jeba@jeba-VirtualBox:~  
jeba@jeba-VirtualBox:~$ history  
1 who  
2 whoami  
3 who -l  
4 clear  
5 w  
6 w -s  
7 w -h  
8 w -f  
9 clear  
10 cat /etc/shadow  
11 sudo cat /etc/shadow  
12 clear  
13 sudo cat /etc/passwd  
14 pwd  
15 clear  
16 history  
jeba@jeba-VirtualBox:~$ !3  
who -l  
LOGIN : tty1 2020-01-15 20:39  
jeba@jeba-VirtualBox:~$
```

780 id=tty1.

Create alias to most commonly used command Alias command instruct the shell to replace one string with another string while executing the command

alias label = "command"

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

Ex:

practiced no:-7  
Topic: Linux Editor - vi

- a) create modify search and navigate a file in editor
- i) creating a file  
to create a file on the terminal type followed by the filename
  - ii) modifying the file  
to modify a file on the vi editor type
  - iii) search of file  
to find a word press **I** followed by the word to search
  - iv) navigate

no movement in four directions

key

action

**k** moves cursor up

**j** moves cursor down

**h** moves cursor left

**l** moves cursor right

scrolling

key

action

**ctrl + f**

scrolls forward

**ctrl + b**

scrolls backward

**ctrl + d**

scroll half page

**ctrl + u**

scroll half page back

word navigate

key action

61

b moves back to the beginning of the word

e moves forward to the end of the word

w moves forward to the beginning of the word

0/zero moves to first character of a line

i) search all essential command like search / replace  
highlight show line number

ii) replace

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

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

```
jeba@jeba-VirtualBox: ~  
Hello  
This is my Linux example  
Welcome  
Welldone  
This is Vi Editor.  
Thank you  
  
replace with new {y/n/s/q/z/RE/VG} : q
```

iii) highlight  
use set h/search

jeba@jeba-VirtualBox ~

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

:set hlsearch

1) 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

practical no :- 8  
Topic :- Linux security

use of sudo to change user privileges to root  
create an unprivileged 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 user root privileges edit /etc/sudoers  
using vi sudo - Enter new lines as highlighted below

```
# Please consider adding local content to /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 operations that require sudo privilege

```
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

```
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 20, 2020
Password expires      : never
Password inactive     : never
Account expires        : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
jeba@jeba-VirtualBox:~$ sudo chage user1
Changing the aging information for user1
Enter the new value, or press ENTER for the default

    Minimum Password Age [0]: 100
    Maximum Password Age [99999]: 200
    Last Password Change (YYYY-MM-DD) [2020-01-20]: 2020-01-21
    Password Expiration Warning [7]: 5
    Password Inactive [-1]: -
    Account Expiration Date (YYYY-MM-DD) [-1]: 2020-01-31
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 21, 2020
Password expires      : Aug 08, 2020
Password inactive     : never
Account expires        : Jan 31, 2020
Minimum number of days between password change : 100
Maximum number of days between password change : 200
Number of days of warning before password expires : 5
jeba@jeba-VirtualBox:~$ sudo chage -E 25/01/2020 -m 10 -M 90 -I 30 -W 30 user1
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 21, 2020
Password expires      : Apr 20, 2020
Password inactive     : May 20, 2020
Account expires        : Jan 01, 2022
Minimum number of days between password change : 10
Maximum number of days between password change : 90
Number of days of warning before password expires : 30
```

d) delete newly added user

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

topic:- network management

get ip address of your machine using ifconfig

```
jeba@jeba-VirtualBox:~$ ifconfig
enp0s3      Link encap:Ethernet HWaddr 08:00:27:0e:6b:69
             inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
             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)
```

) get hostname of your machine

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

using ping to check the network connectivity to remote machine

```
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
```

### d) use of dig command

```
jeba@jeba-VirtualBox:~$ dig www.google.com
; <>> DIG 9.10.3-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 22:40:06 IST 2020
MSG SIZE rcvd: 59
jeba@jeba-VirtualBox:~$
```

### e) troubleshooting network using traceroute to root 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)  0.196 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:~$
```

```
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:~$
```

### f) Use of arp command

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

Use of host command

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

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
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type      State          I-Node Path
unix  2      [ ]        DGRAM
d/notify
unix  2      [ ]        DGRAM
syslog
unix  16     [ ]        DGRAM
dev-log
unix  7      [ ]        DGRAM
socket
unix  3      [ ]        DGRAM
unix  3      [ ]        STREAM   CONNECTED
42149  /run/user/1000/system
4694   /run/systemd/journal/
9695   /run/systemd/journal/
9704   /run/systemd/journal/
9684   /run/systemd/notify
44042  @tmp/dbus-CymTeI7AQG
43331  @tmp/dbus-CymTeI7AQG
42988  @tmp/dbus-CMGGc6G7PS
42690  @tmp/dbus-CMGGc6G7PS
13242  /run/systemd/journal/
stdout
unix  3      [ ]        STREAM   CONNECTED
43113  /run/systemd/journal/
stdout
unix  3      [ ]        STREAM   CONNECTED
43013  /run/systemd/journal/
42935
unix  3      [ ]        STREAM   CONNECTED
```

```
jeba@jeba-VirtualBox:~$ nmap www.google.com
```

```
Starting Nmap 7.01 ( https://nmap.org ) at 2020-01-20 22:51 IST
Nmap scan report for www.google.com (216.58.196.68)
Host is up (0.044s latency).
Other addresses for www.google.com (not scanned): 2404:6800:4007:811::2004
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:~$
```

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## aim & shell scripting

### basic of shell scripting

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

### Echo shell

```
tcsc@tcsc-VirtualBox:~  
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

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```
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:~$
```

- steps to write and execute a shell script
- shell script is just a sample text file with .sh extension
- a) open terminal
  - b) navigate to the place where you want to create script  
Using cd command
  - c) touch filename.sh
  - d) vi filename.sh & you can use your favorite editor  
to edit
  - e) chmod 777 filename.sh
  - f) sh filename.sh or ./filename.sh (for making the script executable program)

#!/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"
```

```
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  
in 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"
```

```
wq
```

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

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

program to find the sum of two number values passed during execution

```

tcsc@tcsc-VirtualBox:~/Desktop$ ./lin.sh
sum is:120

```

### sed

sed command or Stream Editor is very powerful utility offered by Linux system it is mainly used for text substitution find and replace but it can perform other text manipulation like insertion deletion search etc with sed consider the following text file

```

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

```

1) display partial text of a file  
with sed we can view only part of a  
file rather than seeing whole file

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

2) display all except sometimes  
to display all content of a file except for  
some portions use option 'd'

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

3) deleting a line  
to delete a line , use line number followed  
by 'd'

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

Search and replacing a string

i) 's' option is for searching a word

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```
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
```

3) Replace a string on a particular line  
to replace a string on a particular line use line number  
with 's' option

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

add a line after / before the matched string  
add a new line with some context 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
```

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

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

2) to change a whole line with matched pattern  
to change a whole line to a new line when a selected 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
```

3) appending file

to add some context before every line with sed use \* ends 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
```