



# BASIC LINUX WORKSHOP

# AGENDA FOR THE SESSION



- Myths about Ubuntu
- Ubuntu and FOSS
- GUI and Compiz effects
- Keyboard Shortcuts
- Networking and browsing
- File Structure
- Types of users
- Terminal
- Basic Terminal Commands
- Package Management
- PMS on Ubuntu
- VIM
- Useful VIM commands

# MYTHS ABOUT LINUX



- Not User Friendly
  - Let's see...
- Can't open “some” files
  - Windows does not open a single Linux file, Linux opens tons of Windows files !
- Only for geeks
  - Linux makes you a geek !
- Installing it is difficult
  - Much easier and flexible than Windows !
  - Seems difficult Because you want “dual” boot
  - Windows doesn't support dual boot mode, Linux does!



- What is Ubuntu?
  - Ubuntu is a “GNU/Linux Distribution”.
- What is Linux?
  - Linux is a “kernel”.
- What is Kernel?
  - OS is made of different parts , & 'kernel' is just one of them ! As simple as that !!



- What is OS?
  - OS is a program , just like that of “hello world” .
  - It is the controller , which decides how all the resources( like the monitor , keyboard , memory , hard-disk , processor....)are to be used & it maintains a wonderful coordination among all these.
- OS is a software . True or False ?? ( *TRUE* )
- So, computer = Hardware + Software & this Software is nothing but OS .



- Kernel is a program . True or False ?(*TRUE*)
- Ubuntu is a OS . True or False ?(*TRUE* )
- Linux is a OS. True or False ?(*FALSE* )
- Ubuntu( *CANONICAL*) is the most popular “Linux Distribution” .
- Others are : Fedora(*RED HAT*) ,  
Debian(*Community-driven*) ,  
OpenSuse(*NOVELL*).... & the list goes on .

# LINUS TORVALDS & TUX



# LINUX BASED OS



ubuntu





- What are the common things among Ubuntu, Debian , Fedora & OpenSuse ??
  - All of them are OS .
  - All are “GNU/Linux Distributions” i.e. all these OS’s have used one same program as their “kernel” & i.e. Linux .
  - Most importantly , all of them are FOSS( Free and Open Source Software )

# WHAT IS FOSS??

**FREE AS IN  
FREEDOM**  
RICHARD STALLMAN'S  
CRUSADE FOR FREE SOFTWARE



- Free & Open Source Software
- It has the following features :
  - the user must have the FREEdom to do anything with the software.
  - change it to his needs.
  - use it in his project without any need to ask the person who developed that software.
  - Be “allowed”( I mean , LEGALLY ) to solve the bug in it etc etc..

# WHAT IS FOSS??



- Now for all this “FREE”dom to be given, obviously the user must have the “**source-code**” of the software, which is given by the FOSS !
- The software exactly against all these is “Proprietary” Software.
- Patents vs “FREE”dom.

# WHAT IS FOSS ??



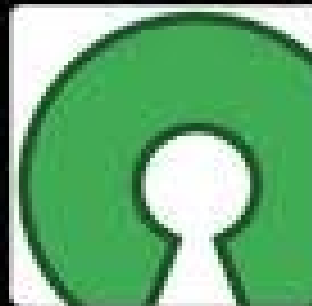
Just because you pay for it,  
Doesn't mean it's better



Secure



Fast



Free

Welcome to Open Source,  
The future of computer software

# WHAT IS COFSUG??



- COep Free Software Users Group.
- Google Group
- Its intentions
- Its activities & role
- Join it to know it..!!!
- <https://groups.google.com/group/cofsug?hl=en>

# What is 'GNOME'?



- Basic OS is just like the physical terminal..
- We can do all the operations using command line
- It is a 'graphical user interface'(GUI) that runs on top of a computer operating system.
- "GNU Network Object Model Environment.

# COMPIZ EFFECTS



# KEYBOARD SHORTCUTS



Ctrl + Alt + T

Mod4 + w (mod4 = "super" key)

alt + F10

alt + F9

alt + F5

alt + F4

alt + F7

alt + F8

alt + F3

alt + space

alt + "1/2/3/4/.."

Terminal

Initiate Window Picker

toggle maximize window

minimize window

restore window

close window

move window

resize window

shaded state

windows menu

switch to that tab



# KEYBOARD SHORTCUTS



Ctrl + X

cut

Ctrl + V

paste

Ctrl + A

select all

ctrl + alt + delete

Shutdown Menu

ctrl + alt + l

lock screen

Terminal :

Ctrl + Shift + '+'

zoom in

Ctrl + -

zoom out

Ctrl + 0

original size

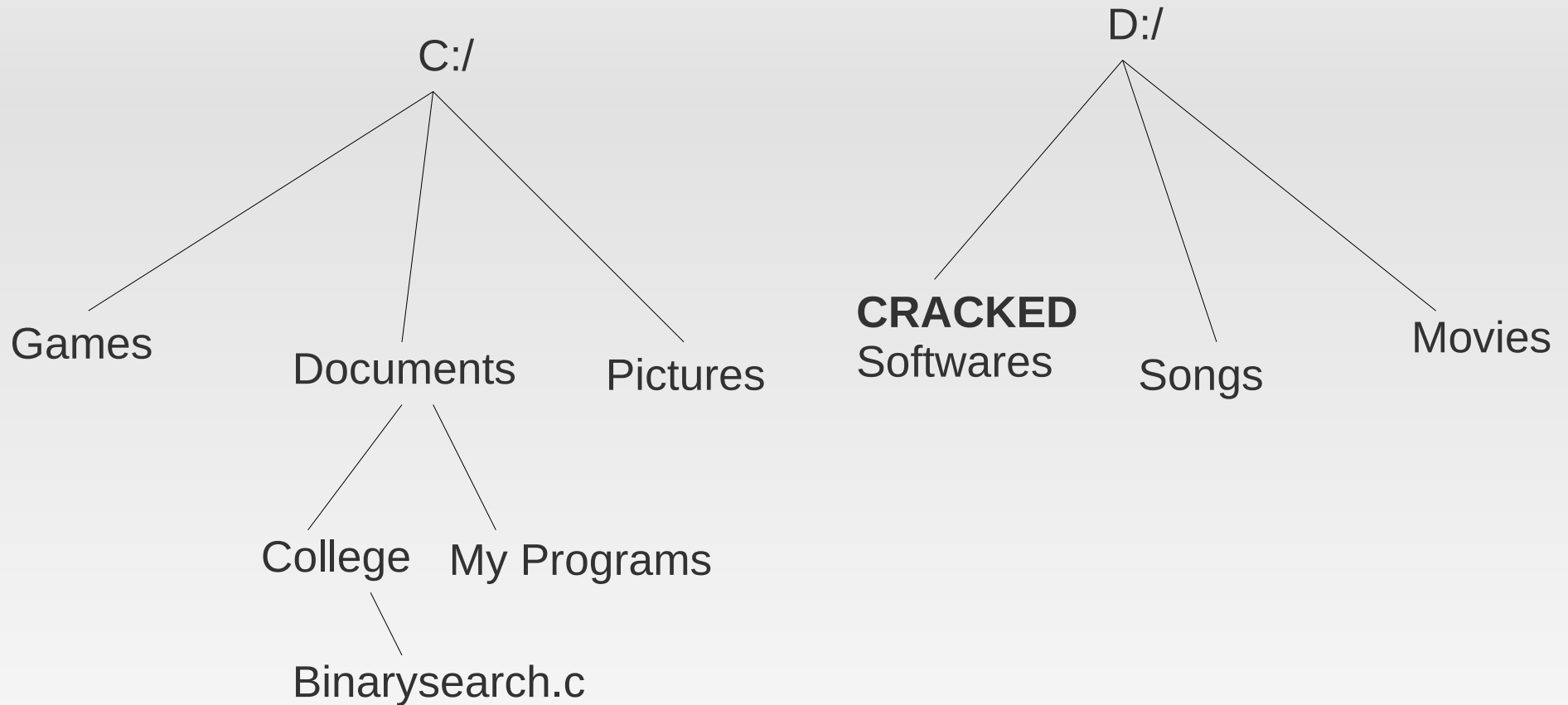


- Network connection through :
  - LAN
  - Wi-Fi
  - Bluetooth
- Network Proxy
- Useful Networking softwares
  - Firefox
  - Downthemall
  - Empathy Chat manager

# FILE STRUCTURE IN WINDOWS



## Forest Structure in windows

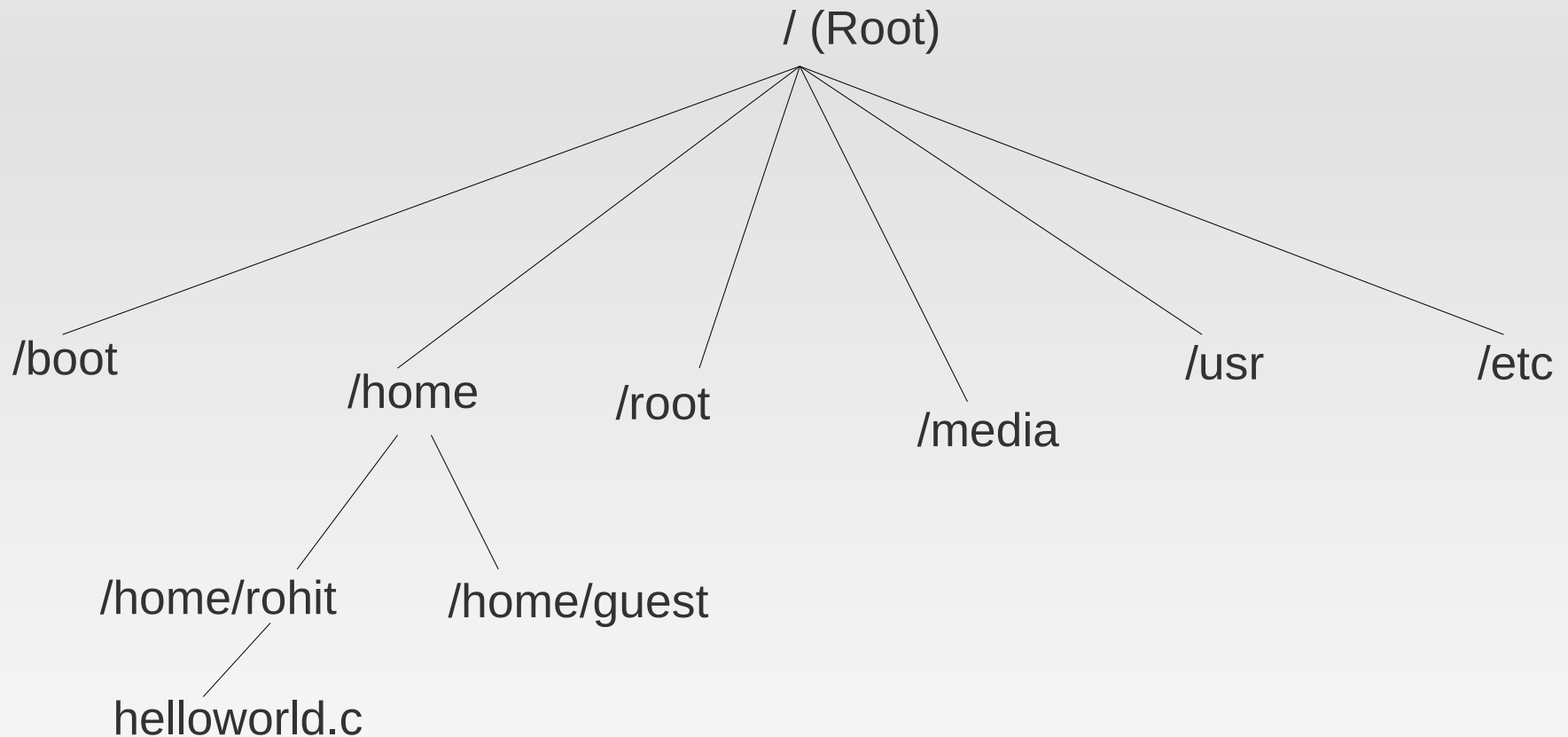


**Path : C:\Documents\College\Binarysearch.c**

# FILE STRUCTURE IN LINUX



## Tree Structure in Linux



**Path : /home/rohit/helloworld.c**

# DIRECTORIES IN /(ROOT)



- /bin Important *binary* applications
- /boot Boot configuration files
- /dev The *device* files
- /etc Configuration files, startup scripts, *etc...*
- /home Local users' *home* directories
- /lib System *libraries*
- /lost+found Provides a *lost+found* system for files that exist under the root
- / Root directory

Continued...

# DIRECTORIES IN /(ROOT)



- /usr Applications and files that are mostly available for all *users* to access
- /var Variable files such as logs and databases
- /mnt Mounted filesystems
- /opt Provides a location for *optional* applications to be installed
- /proc Special dynamic directory that maintains information about the state of the system, including
- /root Root user home directory, pronounced 'slash-root'

# DIRECTORIES IN /(ROOT)



- /sbin Important system binaries
- /sys System file
- /tmp Temporary files
- /media Mounted (loaded) removable media such as CDs, digital cameras, etc...

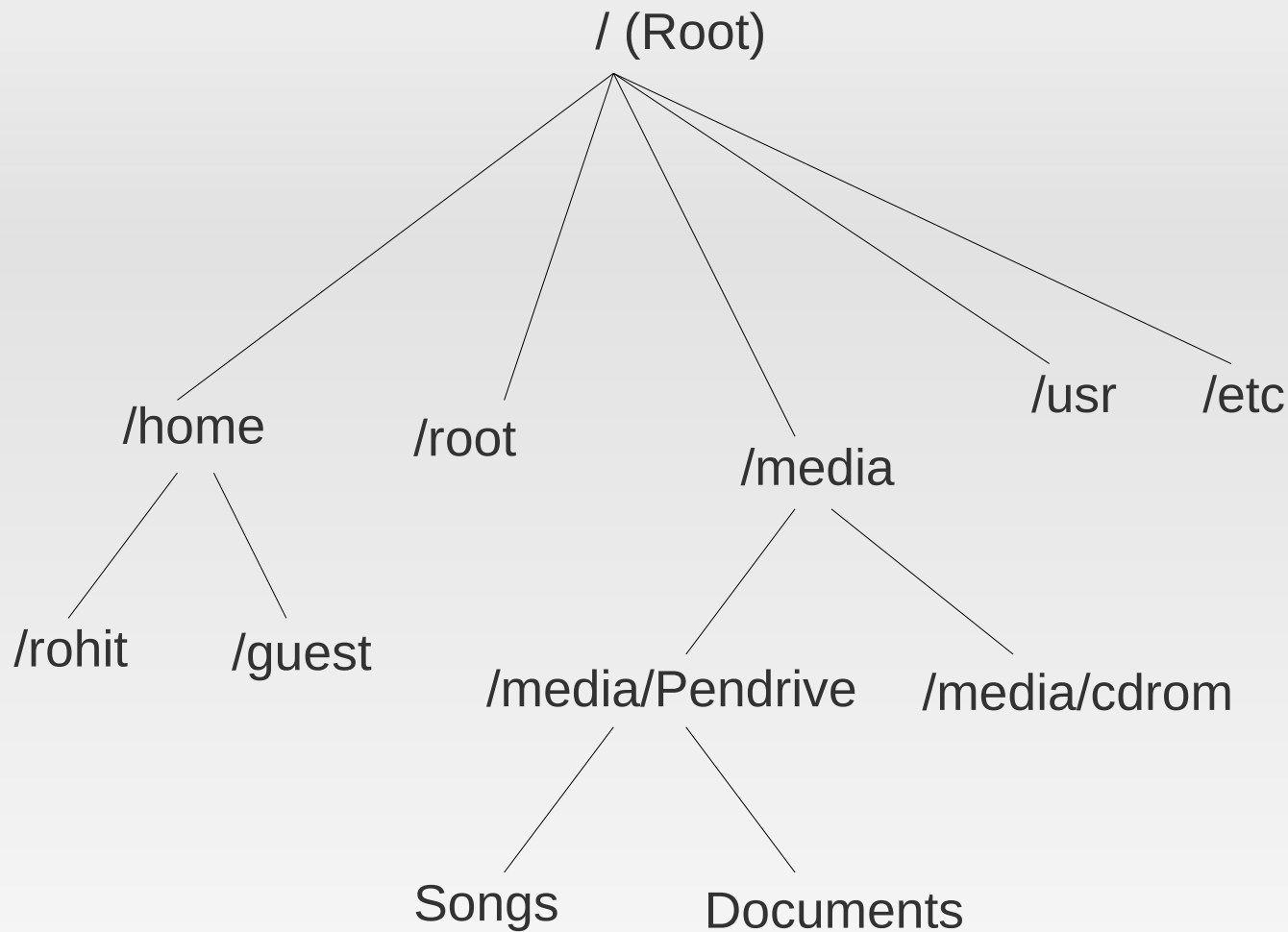
# NAMESPACES IN LINUX



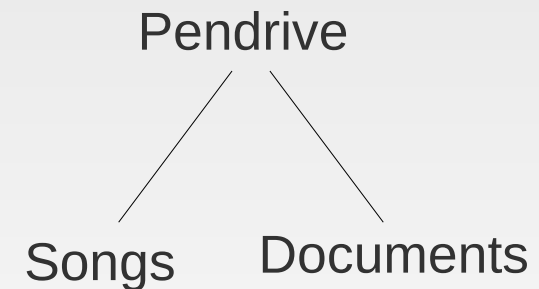
- File names and folders are case sensitive in linux.
  - eg. Foss and FOSS are different names in linux **unlike windows.**
- Hidden files
  - Any folder or filename with preceding **.(dot)** becomes a hidden.
  - eg **.college.c**
  - Use **ctrl + H** to view / hide hidden files & folders.



# MOUNT IN LINUX



## Tree Structure for Pendrive



**Path for Songs : /media/Pendrive/Songs/**

# SUDO COMMAND



- There are three types of Users :
  - Normal User Has limited powers. Can use the system but not administer it. e.g. student User in FOSS Lab
  - Sudo User Has variable powers. Can be allotted complete administration power by the root user...
  - Root User The owner of the computer. Root has all the powers to make any change in the computer.
- Note : refer '**man sudo**' for more info.



- WHAT IS GNOME Terminal?

An application used for:

- Executing commands.
- Used to run other applications.

Types of terminal:

- Physical Terminal
- Virtual Terminal

- Useful Terminal shortcuts

- Ctrl + Alt + T (starting the terminal by default)
- Ctrl + L (clear the screen)
- Ctrl + A (go to the start of the command)
- Ctrl + E (go to the end of the command)



- Terminal shortcuts continued..
  - Ctrl + U (delete everything before the cursor)
  - Ctrl + D or exit (exit the terminal )
  - Ctrl + Shift + T (start another tab in same window)
  - Ctrl + Alt + F2...F6 (go to physical terminal)
  - Ctrl + Alt + F7 (go back to gnome desktop)
  - Ctrl + R (Reverse search)

# BASIC TERMINAL COMMANDS



- **pwd** : to print name of current/working directory
- **ls** : to list current directory contents
  - `ls dir_name`: displays contents of the directory
  - `ls -a` : display all files
  - `ls -l` :long listing format
- **man** : display manual page of give command
  - `man ls`
- **cd** : Used to navigate in the file-system tree.
  - `cd dir_path`
  - `cd ..` goto parent directory
  - `cd -` goto previous directory
  - `cd` goto home directory

# BASIC TERMINAL COMMANDS



- **mkdir** : makes a new directory in the current directory
  - `mkdir dir_name`
- **rm** : delete a file
- **rmdir** : remove a directory
- **mv** : move a file (cut) Also used to rename a file .. so no rename command exists
  - `mv source_filename destination_filename`
- **cp** : to copy file from one location to another
  - `cp source_filename destination_filename`

# BASIC TERMINAL COMMANDS



- **date** : displays today's date and time
- **time** : (If date displays both date and time what will time command display?? find out..!!!)
- **cal** : calender
  - Cal: displays current month calender  
(try out `cal -3` and `cal -y 1992`)
- **locate** : searches for the given pattern in whole file tree
  - `locate <pattern>`

# BASIC TERMINAL COMMANDS



- **grep** : it searches the given string in the specified file(s) and prints the lines of the files containing the string
  - `grep <pattern> file1 file2 file3`
- **whatis** : it gives short description of each manual page
- Running Applications in terminal
  - Firefox, gedit, gnome-terminal, nautilus, ooffice, google-chrome, vlc



# TRICKS IN TERMINAL



- Using <tab> for auto-completion of commands
- Using special character '\*'
  - \*.c all files with names ending in .c
  - ubu\* all files with names starting with 'ubu'
  - u\*.c all files with names starting with 'u' and ending in '.c'
  - \* all files

# Package Management



- What is Package Management?
  - Package management is nothing but installing packages, removing them, upgrading them to latest version, and all such kind of things.
- In windows we just double click a .exe file and the s/w is installed!!
- Is this good or bad?

# Package Management



- Is there nothing like that in Linux?
  - Yes there is , no there isn't!! And both are true.
- Get a .deb package , double click it, and that's it!
- Limitations to this method
- After all of that about .deb, basically what is a package?
- Ubuntu uses .deb packages.
- Other formats like .rpm (RedHat, Fedora) are also there.

# PMS ON UBUNTU



- There are 3 major Package Management Systems (PMS) on Ubuntu :
  - Apt-get
  - Ubuntu Software Center
  - Synaptic Package Manager
- There are others also like aptitude etc.

# WHAT IS APT-GET?



- Let's see a demo.
- Apt-get is a command line tool, used for Package management. It stands for **Advanced Packaging Tool**.
- Two pre-requisites to execute apt-get commands :
  - Administrative Privileges (su and sudo)
  - Repositories (/etc/apt/sources.list)

# MORE OF APT-GET



- apt-get update
- apt-get install <package\_name>
- apt-get remove <package\_name>
- apt-get purge <package\_name>
- apt-get upgrade

# GUI FOR PMS



- Ubuntu Software Center
  - Applications → Ubuntu Software Center
- Synaptic Package Manager
  - System → Administration → Synaptic Package Manager



- Advantages of using vim
  - Faster coding
  - Least use of mouse
  - Portable
- Two modes of vim :
  - Insert mode
  - Command mode
- Two types of commands :
  - Ex commands
  - Vi commands
- Editing Buffer



# USEFUL VIM COMMANDS



- Vim filename      To open a file
- :q                      To close a file
- :w <filename>      To save/ save as
- dd                      To delete a line
- x                        To delete a character
- yy                      To copy(yank) a line
- p                        To paste data
- :%s/source/dest      To Replace source with dest
- :<line\_num>            To jump to particular line
- m<char>                To mark current line

# USEFUL VIM COMMANDS



- `u` To Undo changes
- `Ctrl + R` To Redo Changes
- `:set autoindent` To set auto-indentation
- `:set number` To show line numbers
- `/<pattern>` To search for particular pattern
- `:set hlsearch` Highlight all the matched patterns
- `:set incsearch` Highlighting search while typing
- `!:<command>` To execute Terminal Command
- `r<char>` To replace character with <char>

# USEFUL VIM COMMANDS



- `~/.vimrc` file      this file gets executed before vim begins.
- `vimtutor`            It is an offline tutorial.

# FEEL FREE TO CONTACT...



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