

# Introduction to Linux Desktop

---

Vinodh Ewards



# How to get Linux ?

- Download it from the Internet
  - Create your own distribution
- Live CD
- From a “Distribution” vendor
  - Redhat / Fedora
  - Suse
  - Mandrake
  - Debian
  - Gentoo
  - Slackware, etc.



[www.linuxiso.org](http://www.linuxiso.org) ; [www.distrowatch.org](http://www.distrowatch.org)

# Linux distribution

## • What is a Distribution?

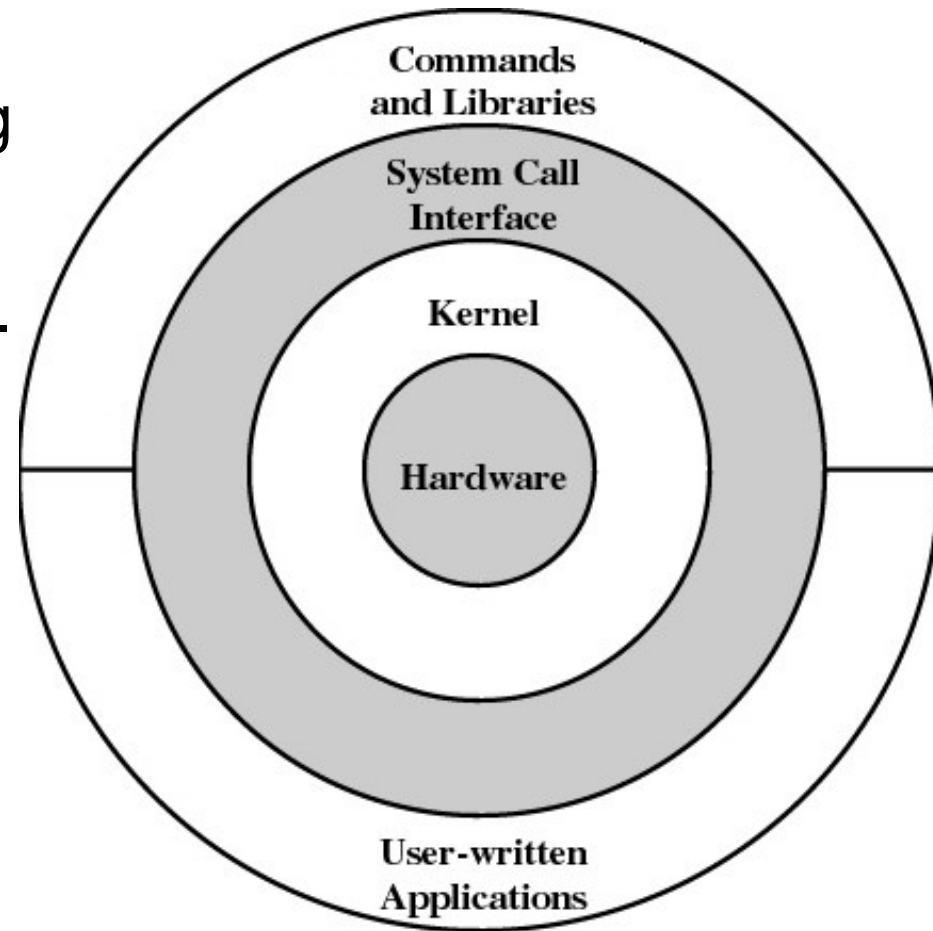
- Torvalds and community develop kernel
- Torvalds finalizes kernel
- Many companies package the Linux kernel with a selection of tools – “a distribution”
  - Linux kernel
  - X Windows system and GUI
  - Web, E-mail, FTP and other servers
  - Installation & configuration support
  - Third party apps
  - Hardware support

[www.redhat.com](http://www.redhat.com) ; [www.opensuse.com](http://www.opensuse.com) ; [www.debian.org](http://www.debian.org),  
[www.slackware.com](http://www.slackware.com) ; [www.gentoo.org](http://www.gentoo.org) ; [www.linuxfromscratch.org](http://www.linuxfromscratch.org)



# Linux Architecture

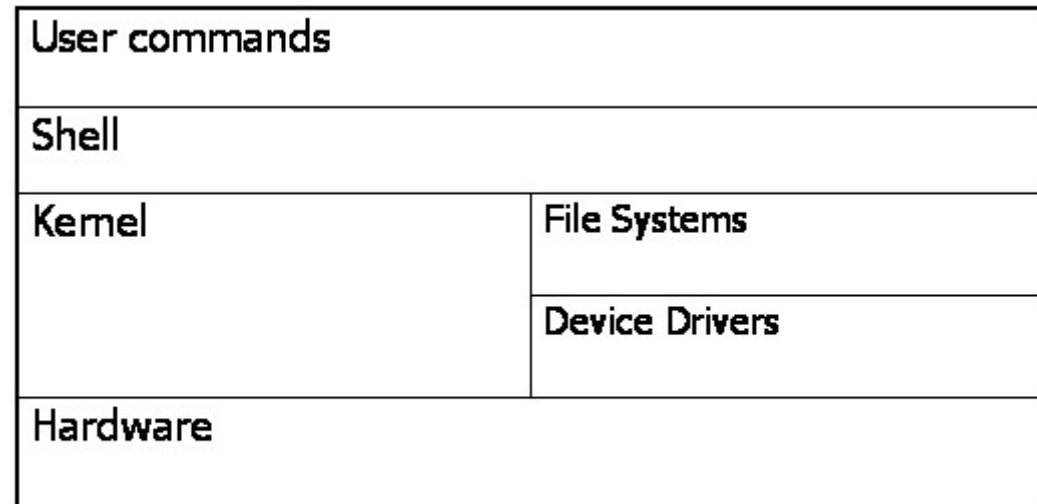
- **Based on Unix Philosophy**
  - Write programs that do one thing and do it well.
  - Write programs to work together.
  - Write programs to handle text streams, because that is a universal interface
- **Modular kernel**
- **And a set of utilities and libraries**



# Linux Architecture

User commands includes executable programs and scripts

The shell interprets user commands. It is responsible for finding the commands and starting their execution. Several different shells are available. Bash is popular,



The kernel manages the hardware resources for the rest of the system.



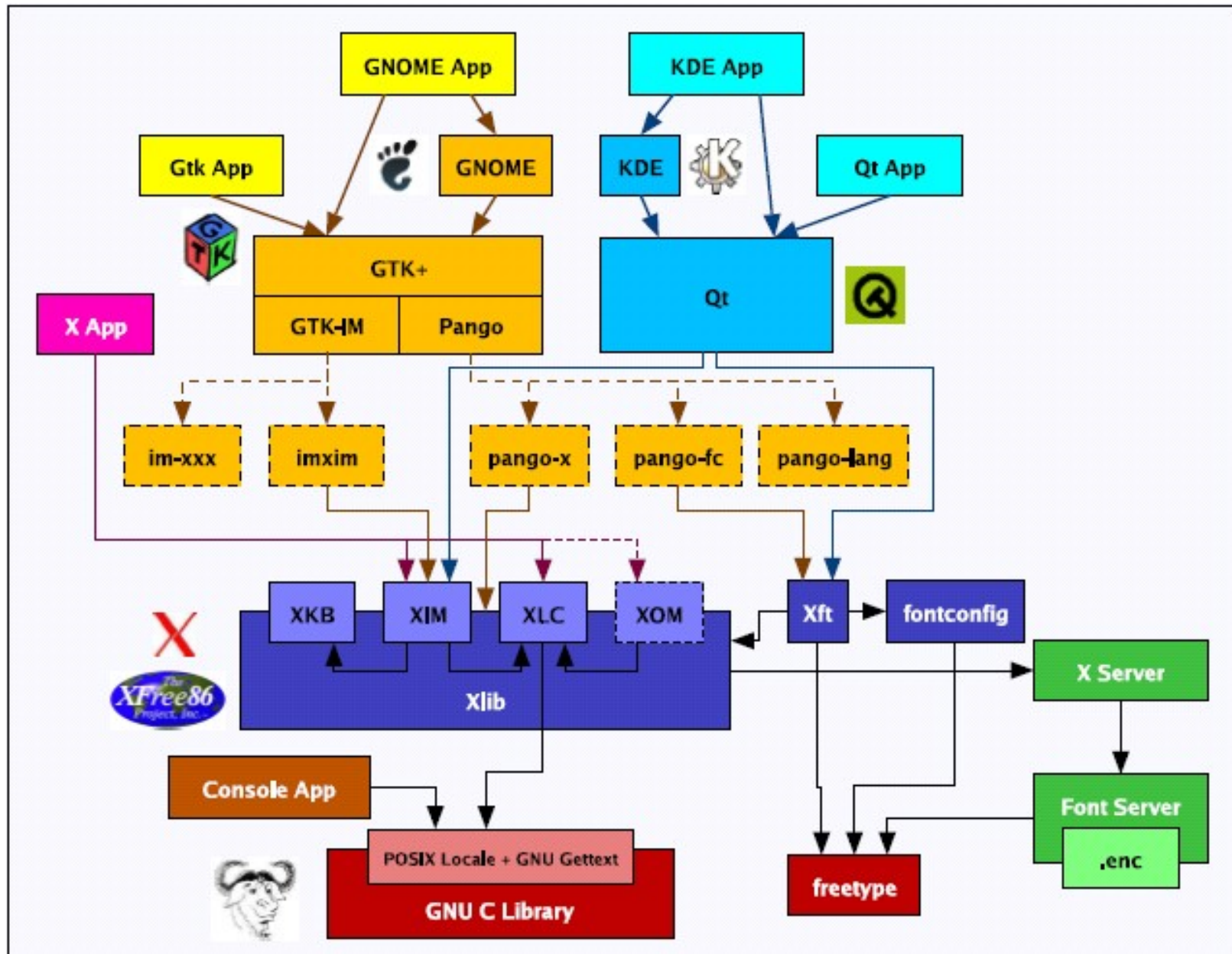
# Linux Desktop

- X windows system is the Linux GUI
  - Client Server Architecture (X Server, Font Server)
  - X Server controls graphics on local computer
  - X Clients may run locally or remotely
- Desktop Environments
  - GNOME (GNU Network Object Model Environment)
  - KDE (K Desktop Environment)
  - XFCE, XPDE, Enlightenment etc.

[www.xfree.org](http://www.xfree.org) ; [www.gnome.org](http://www.gnome.org) ; [www.kde.org](http://www.kde.org)



# Linux Desktop Environments



# A Linux Desktop

The screenshot displays a Linux desktop environment with a green field background. At the top, there are window titles for a terminal, an email client, and a browser. A weather widget for Chennai shows the following data:

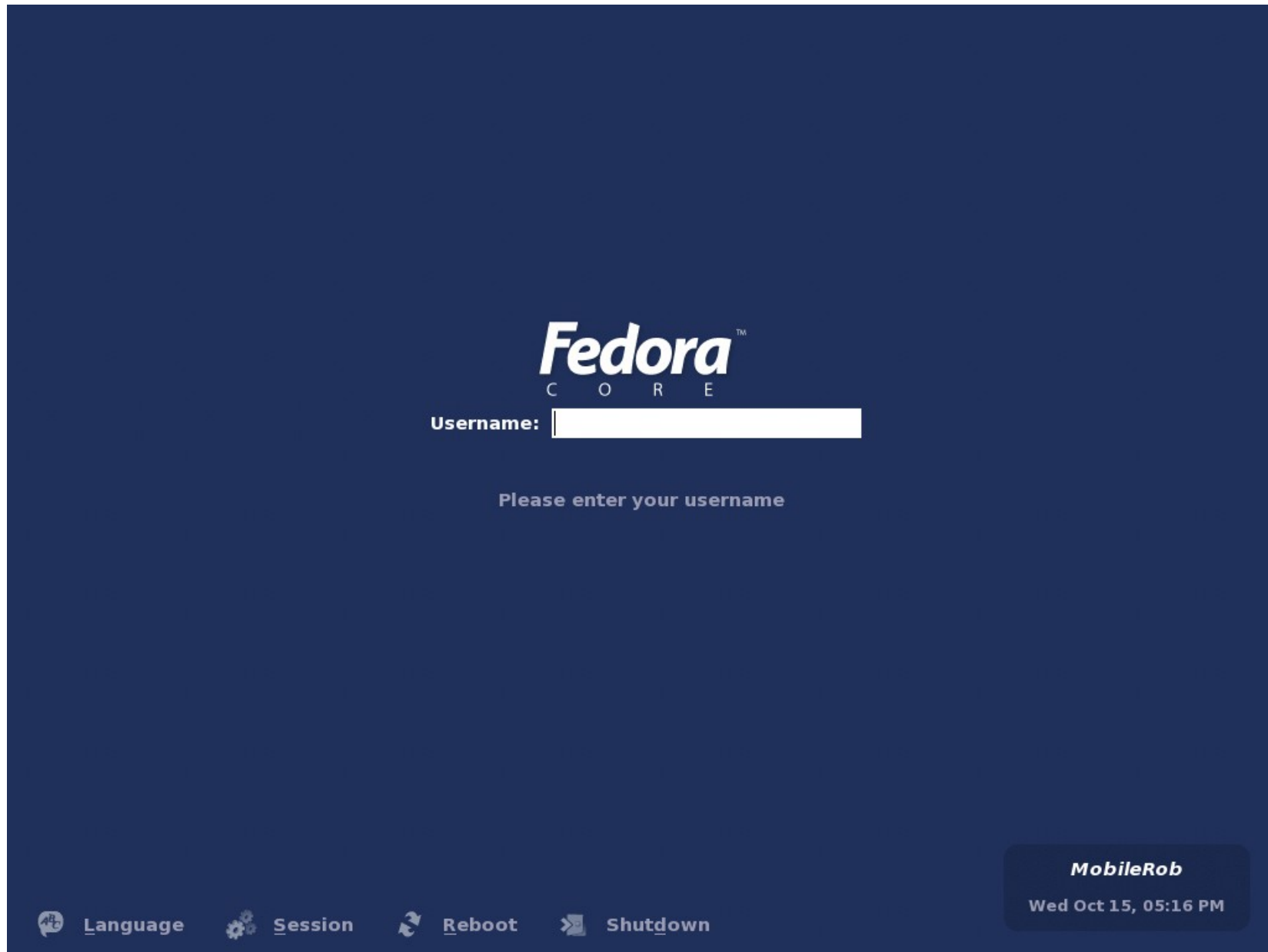
- Temperature: 27 °C
- Feels like: 30 °C
- Dew point: 23 °C
- Pressure: 1011.51 hPa rising
- Wind: 3 kph NNE
- Humidity: 77%
- Sunrise: 06:04
- Sunset: 17:42
- Visibility: unlimited
- Conditions: Partly Cloudy

On the right side, a system status panel provides the following information:

- Load: 8
- Linux 2.6.8-1-k7
- RAM: 97% (213.61M/219.06M)
- Swap: 4% (47.34M/1.12G)
- /: 29% (693.63M/2.33G)
- /fs/windows/c: 66% (1.55G/2.33G)
- /fs/windows/d: 94% (564.68M/595.87M)
- /fs/windows/e: 91% (547.31M/595.87M)
- /fs/windows/f: 45% (268.79M/595.87M)
- eth0 10.11.64.104  
in : 1.09GB  
out : 53.77MB  
in : 641B/s  
max : 415.09KB/s  
out : 29B/s  
max : 20.15KB/s
- Volume: 87% (/dev/mixer)
- 23:08 Wed 03 Nov 04
- 09:38 Wed 03 Nov 04

The taskbar at the bottom includes icons for Applications, Actions, and various system utilities. A penguin icon is visible in the bottom right corner.

# “Welcome to Linux”



The image shows the Fedora Core login screen. At the top center, the word "Fedora" is written in a large, white, serif font, with "CORE" in a smaller, white, sans-serif font below it. Below the logo, the text "Username:" is followed by a white rectangular input field. Underneath the input field, the text "Please enter your username" is displayed in a smaller, white, sans-serif font. At the bottom of the screen, there is a navigation bar with four icons and their corresponding labels: a speech bubble icon for "Language", a gear icon for "Session", a circular arrow icon for "Reboot", and a power button icon for "Shutdown". In the bottom right corner, the username "MobileRob" and the date and time "Wed Oct 15, 05:16 PM" are displayed in a white, sans-serif font.

**Fedora**  
C O R E

Username:

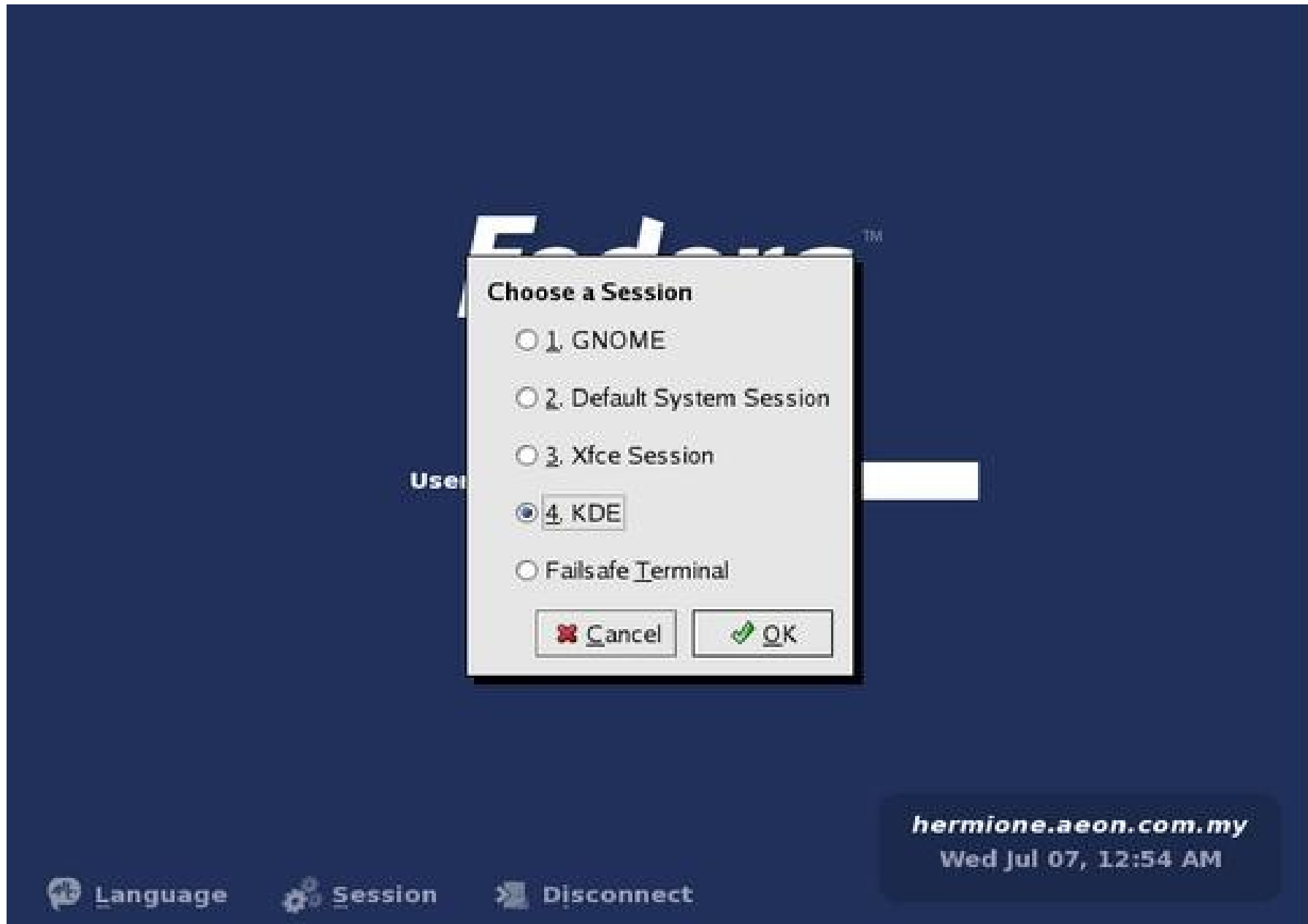
Please enter your username

[Language](#) [Session](#) [Reboot](#) [Shutdown](#)

**MobileRob**  
Wed Oct 15, 05:16 PM



# “The Choice is yours”



The image shows the Fedora Linux login screen. At the top, the word "Fedora" is partially visible in a large, white, stylized font. Below it, a dialog box titled "Choose a Session" is open. The dialog box contains a list of session options, each with a radio button:

- 1. GNOME
- 2. Default System Session
- 3. Xfce Session
- 4. KDE
- Failsafe Terminal

At the bottom of the dialog box, there are two buttons: "Cancel" (with a red 'X' icon) and "OK" (with a green checkmark icon). The background of the login screen is dark blue. In the bottom left corner, there are three icons with labels: "Language", "Session", and "Disconnect". In the bottom right corner, there is a white box containing the text "hermione.aeon.com.my" and "Wed Jul 07, 12:54 AM".



# KDE Desktop

- KDE Desktop

- Object Model: KParts
- Component Exchange: DCOP (Desktop Communication Protocol)
- Clipboard Manager: Klipper
- User Interface: Qt / KDElibs
- Configuration: serialized objects / plain text





Trash

All Applications

- Accessories
- Games
- Graphics
- Internet
- Office
- Preferences
- Programming

- Sound & Video**
- System Settings
- System Tools
- Find Files
- Help
- Home

Actions

- Run Command...
- Lock Screen
- Logout...

- More Sound & Video Applications
- Audio Player
- Kaboodle
- KAudioCreator
- KMix
- KRec
- KsCD
- Music Player
- Noatun
- Sound Juicer CD Ripper
- Sound Recorder

file:/home/mgpeter - Konqueror

Location Edit View Go Bookmarks Tools Settings Window Help

Location: file:/home/mgpeter

Desktop

# GNOME Desktop

## • GNOME

- Object Model: Bonobo (extends CORBA)
- Component Exchange: Gnorba (GNOME CORBA framework) / Orbit (free CORBA implementation)
- Clipboard Manager: GCM (GNOME Clipboard Manager)
- User Interface: GTK+ / GNOME-libs
- Configuration: GConf



- Accessories
- Games
- Graphics
- Internet**
- Office
- Preferences
- Programming
- Sound & Video
- System Settings
- System Tools
- Browse Filesystem
- Help
- Network Servers
- Run Application...
- Search for Files...
- Recent Documents
- Lock Screen
- Log Out

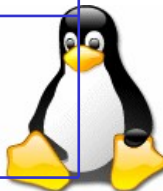
- More Internet Applications
- Email
- Evolution Email
- IRC Client
- KGet
- Kopete
- KPPP
- KSirc
- Messaging Client
- Remote Desktop Connection
- Web Browser**

Browse the Internet



# Networking Applications

Windows	Linux
Microsoft Internet Explorer, Firefox, Netscape, Opera, etc.	Mozilla, Firefox, Galeon, Konqueror, Lynx, Epiphany, Nautilus, Netscape, Opera
Outlook Express, Outlook, Thunderbird, Pegasus, Lotus Notes	Evolution, Kontact, Thunderbird, Sylpheed-Claws
ICQ, MSN Messenger, AIM (AOL Instant Messenger), Trillian, Gaim	Gaim, Kopete, aMSN, KICQ, Gabber, Centericq
Microsoft Netmeeting	Gnomemeeting
WS FTP, Bullet Proof FTP, CuteFTP	GFTP, Kasablanca, KBear, FireFTP Konqueror
mIRC	Xchat, KSIrc, BitchX



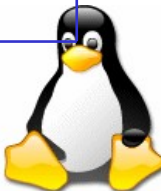
# Multimedia Applications

Windows	Linux
Adobe Photoshop, GIMP, GIMPShop	GIMP GIMPShop
Irfanview	Gthumb, GQView Xnview
3D Studio MAX, Blender	Blender K-3D
Windows Media Player, PowerDVD	MPlayer Xine Totem Kaffeine VLC
Winamp, Sonique	XMMS amaroK BMP juke noatun RhythmBox xine
Windows Movie Maker	Cinelerra KDenlive LiVES
Cubase, CoolEdit	Ardour Rosegarden Audacity Beast
Cakewalk	kmid kmidi



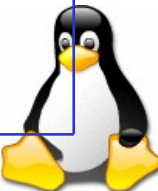
# Office Applications

Windows	Linux
Microsoft Office, OpenOffice	OpenOffice KOffice Siag Office
Word	OOWriter AbiWord KWord
Access	OOBase, PgAccess Rekal Knoda
Excel	OOCalc Gnumeric KSpread
Winzip	FileRoller
PowerPoint	OOImpress KPresenter
Microsoft Project Manager	MrProject
Outlook, Thunderbird	Evolution Kontact Balsa Thunderbird



# Desktop Publishing

<b>Windows</b>	<b>Linux</b>
Netscape Composer, Dreamweaver	OOWeb, NVU, Quanta Plus, Bluefish, Mozilla, Screem
Quark, Quark Express, Microsoft Publisher	Scribus, OpenOfforg oodraw
Adobe Acrobat PDF Reader	Adobe Acrobat Reader Xpdf Ghostview Evince
Adobe Acrobat PDF Creator	With Ghostscript, many Linux apps can print or export to PDF., OpenOffice.org, kprint -- can fax, convert to pdf, and combine pages



# Scientific, Engineering Applications

Field	Applications
Mathematics and Numerical Analysis	GAMS, Maple, Mathematica, Matlab, Octave, Rlab, Scilab
CAD and graphics	Polyray, POV-ray, BRL-CAD, GIG3DGO, Sced, LinuxCAD, MicroStation
Parallel Computing	NetSolve, PETSc, PIM, PLAPACK, ScaLAPACK
Electrical Engineering	APLAC, FinSim, Chipmunk, interHDL, Magic, Ocean, Spice, Voyeur

<http://www.comsoc.org/vancouver/scieng.html>



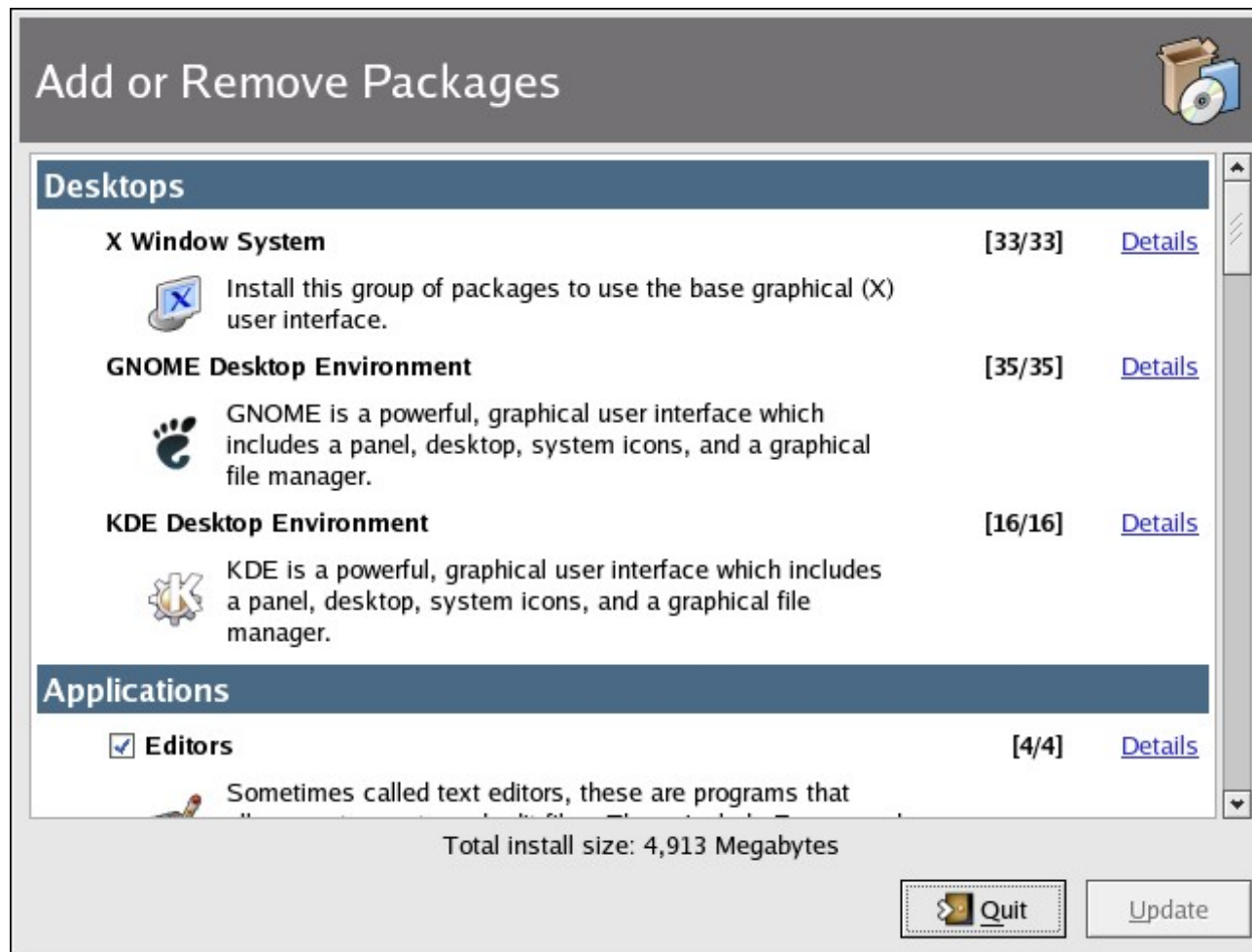
# Installing Applications

- Main Package Management Standards
  - RPM (RedHat Package Manager) (.rpm)
    - Introduced by RedHat and has been adopted by many other distributions (Fedora, Mandrake, SuSe) .
    - The most popular Linux package format
  - DEB (Debian Package Manager) (.deb)
    - Introduced by Debian distribution
  - Tarball files (.tar.gz/.tar.bz2)
    - The old-fashioned way of distributing software in Linux/Unix
    - Compatible with all distros
    - Main package manager in Slackware, Gentoo



# Installing Applications

- RPM – Redhat Package Manager
  - redhat-config-packages / system-config-packages



# RPM based package management

- Using the command line, packages are installed using `rpm` utility program
  - Install a package
    - `rpm -i <package_name>.rpm`
  - Update an existing package
    - `rpm -U <package_name>.rpm`
  - Remove a package
    - `rpm -e <package_name>`
  - Query for a package
    - `rpm -q <package_name>`



# Dependencies

- Installing a package “mod\_test1” :
  - # rpm -Uvh mod\_test1-xxx.rpm  
error: failed dependencies:  
    package-a1 is needed by mod\_test1
  - # rpm -Uvh package-a1-xxxx.rpm  
error: failed dependencies:  
    package-b2 is needed by package-a1
  - # rpm -Uvh package-b2-xxxx.rpm
  - And so on...



# Package management software

- Package management software keeps system in a consistent state
- Manages dependencies
  - Up2date – RedHat
  - RedCarpet – Ximian
  - YOU (YaST Online Update) – Suse
  - YUP (YellowDog Updater) – YellowDog PPC
  - Urpmi – Mandrake
  - YUM (YellowDog Updater Modified)
  - APT (Advanced Packaging Tool) – Debian (and fedora...)



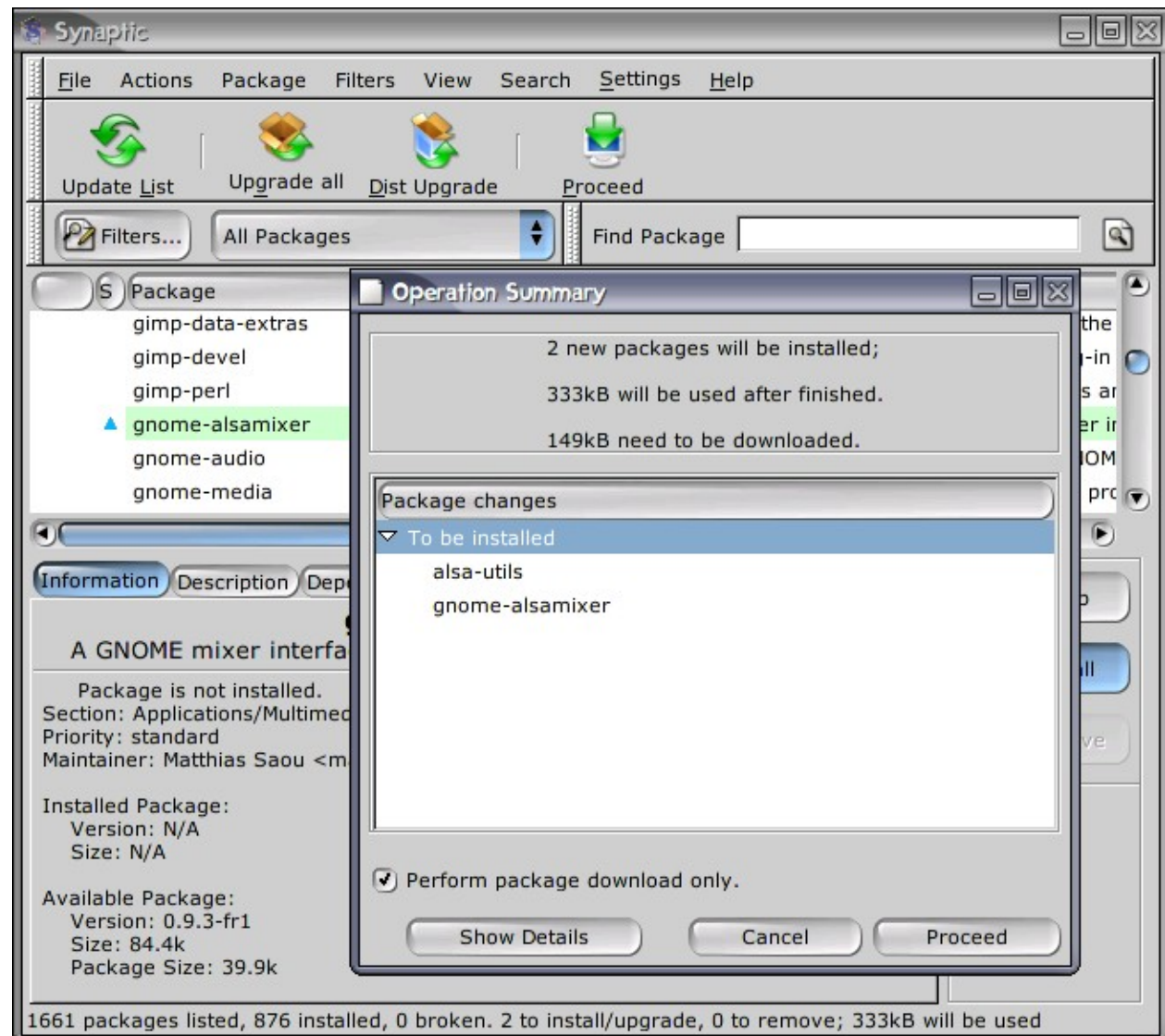
# Using Apt

- APT - Advanced Packaging Tool
  - Updates the system through Internet by connecting to online package repositories
  - APT utilities set (`apt-get`, `apt-cache` etc.) is provided for managing packages on these repositories
  - Provides packages inter-dependency auto-resolve
  - Contacts repositories listed in `/etc/apt/sources.list` file
    - `apt-get update`
    - `apt-get upgrade`
    - `apt-get install <package name>`
    - `apt-get remove <package name>`
    - `apt-cache search mozilla`



# Using synaptic

- A GUI for apt



# Linux File System

- File System is developed to
  - create/store/load/delete/seek file on media like Tape, Floppy disk, Hard disk, Optical Media, Cdrom, Dvdrom
- File System in Linux is divided into 2 types
  - Linux Swap
    - Used in virtual memory system
  - Linux File System
    - Used to store files
    - There are various types of file systems
      - **ext2** ( first introduced in kernel 2.0.x )
      - **reiserfs** ( first introduced in kernel 2.2.x )
      - **ext3** ( first introduced in kernel 2.4.x )



# Difference between Windows FS and Linux FS

<b>Characteristic</b>	<b>Windows</b>	<b>Linux</b>
File System	NTFS, FAT	ext2, ext3
Reference Root of each partition point	Each partition will be its own root Ex. C:, D:, F:	Each partitions is mounted under /



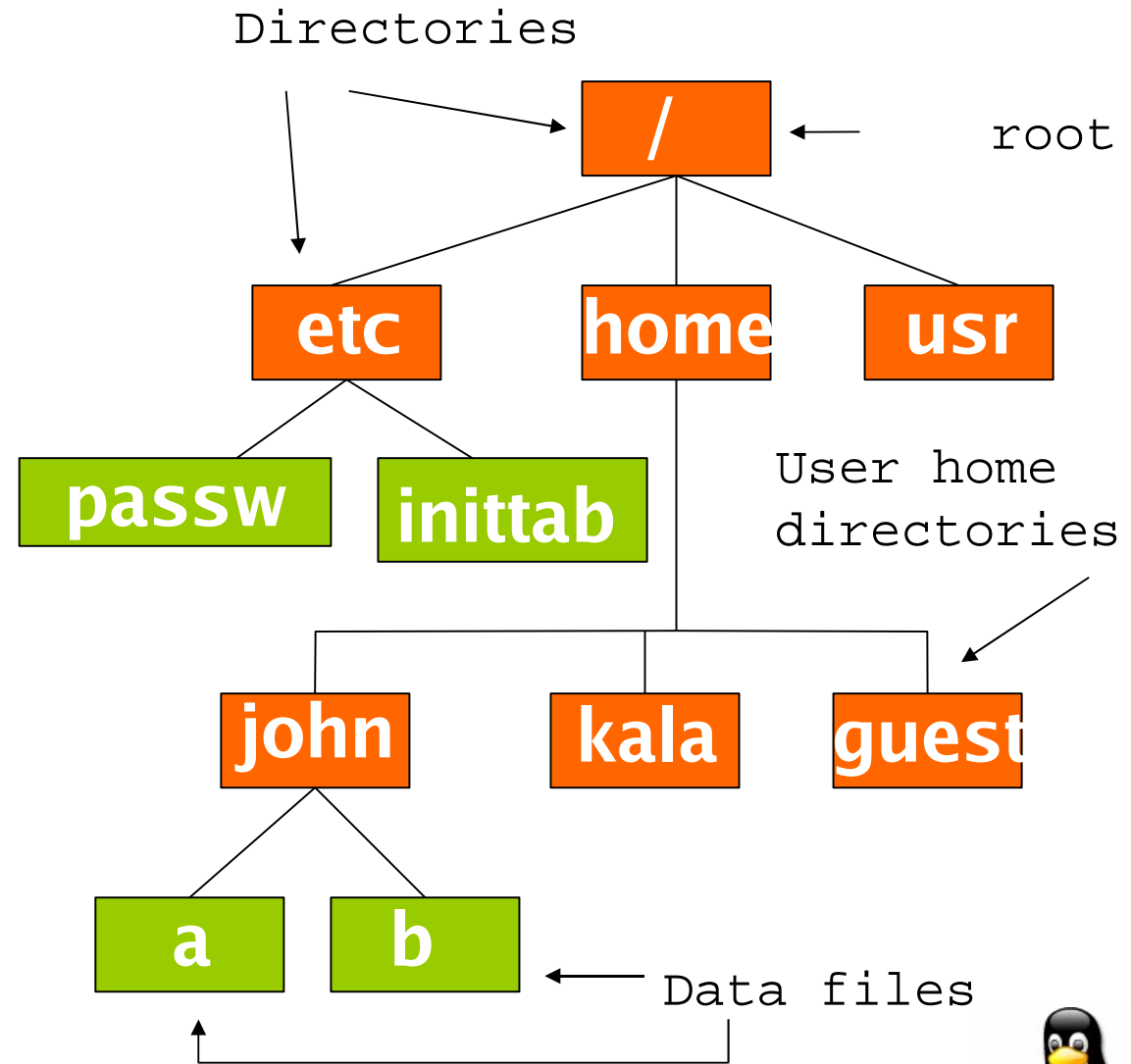
# Files

- In Unix and Linux, everything is a file
- Data can be stored in a **file**
- Each file has a **filename**
  - A label referring to a particular file
  - Permitted characters include letters, digits, hyphens (-), underscores (\_), and dots (.)
  - Case-sensitive — *news.mov* is a different file from *News.mov*
- The `ls` command lists the names of files



# File System basics

- Linux files are stored in a single rooted, hierarchical file system
  - Data files are stored in directories (folders)
  - Directories may be nested as deep as needed



# Directory layout

- / root directory
- /bin, /usr/bin system commands
- /sbin, /usr/sbin commands used by sysadmins
- /etc contains all linux default configuration files
- /boot contains linux booting files
- /dev contains all device files
- /home contains user home directory
- /proc pseudo file system for tracking running processes and state of the linux system
- /var contains mail, log file and printer spooling
- /lib contains shared library
- /tmp contains system temporary files



# Naming Files

- Files are named by

- naming each containing directory

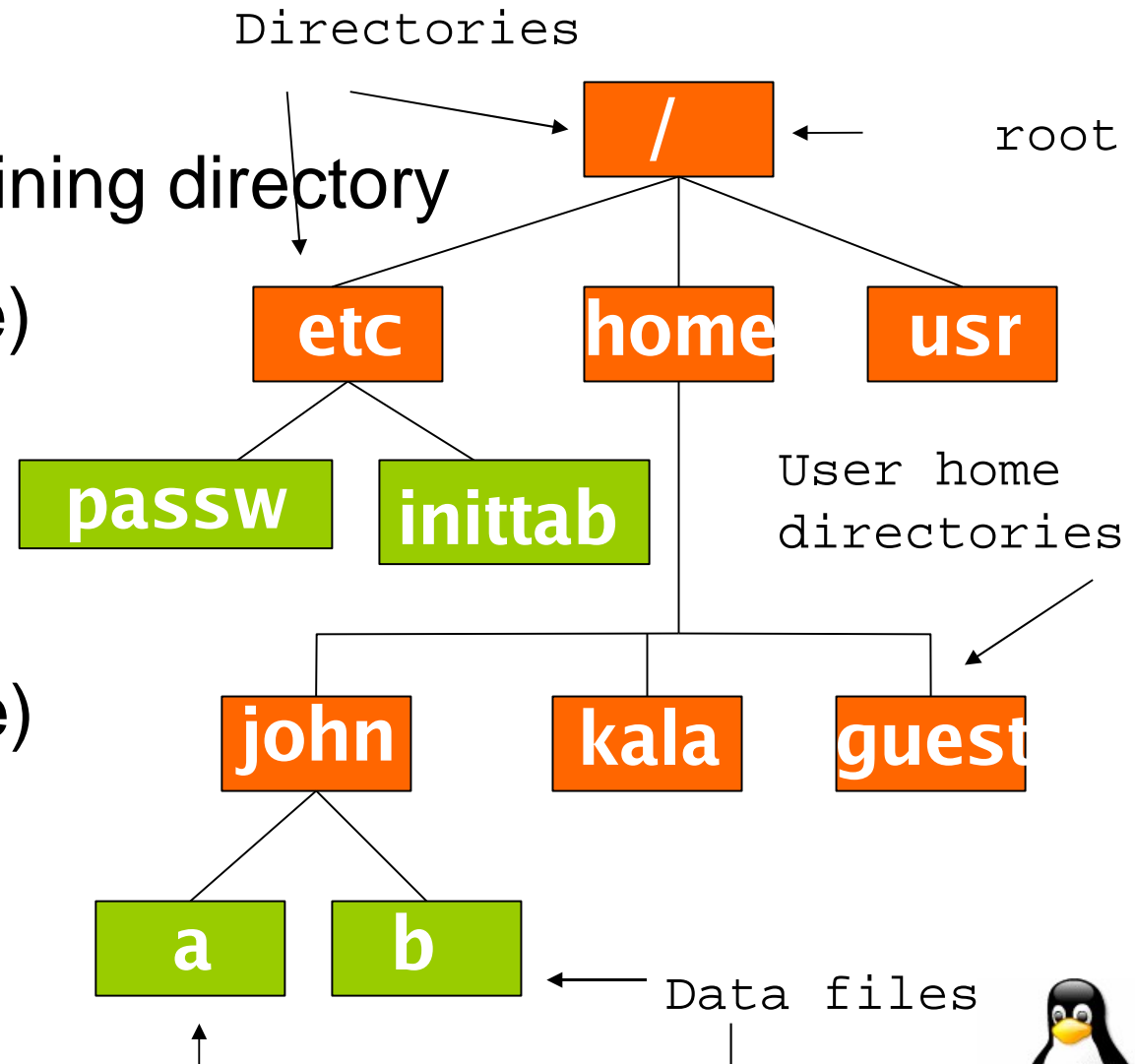
(Relative pathname)

`./a`

- Starting at the root

(Absolute pathname)

`/home/john/a`



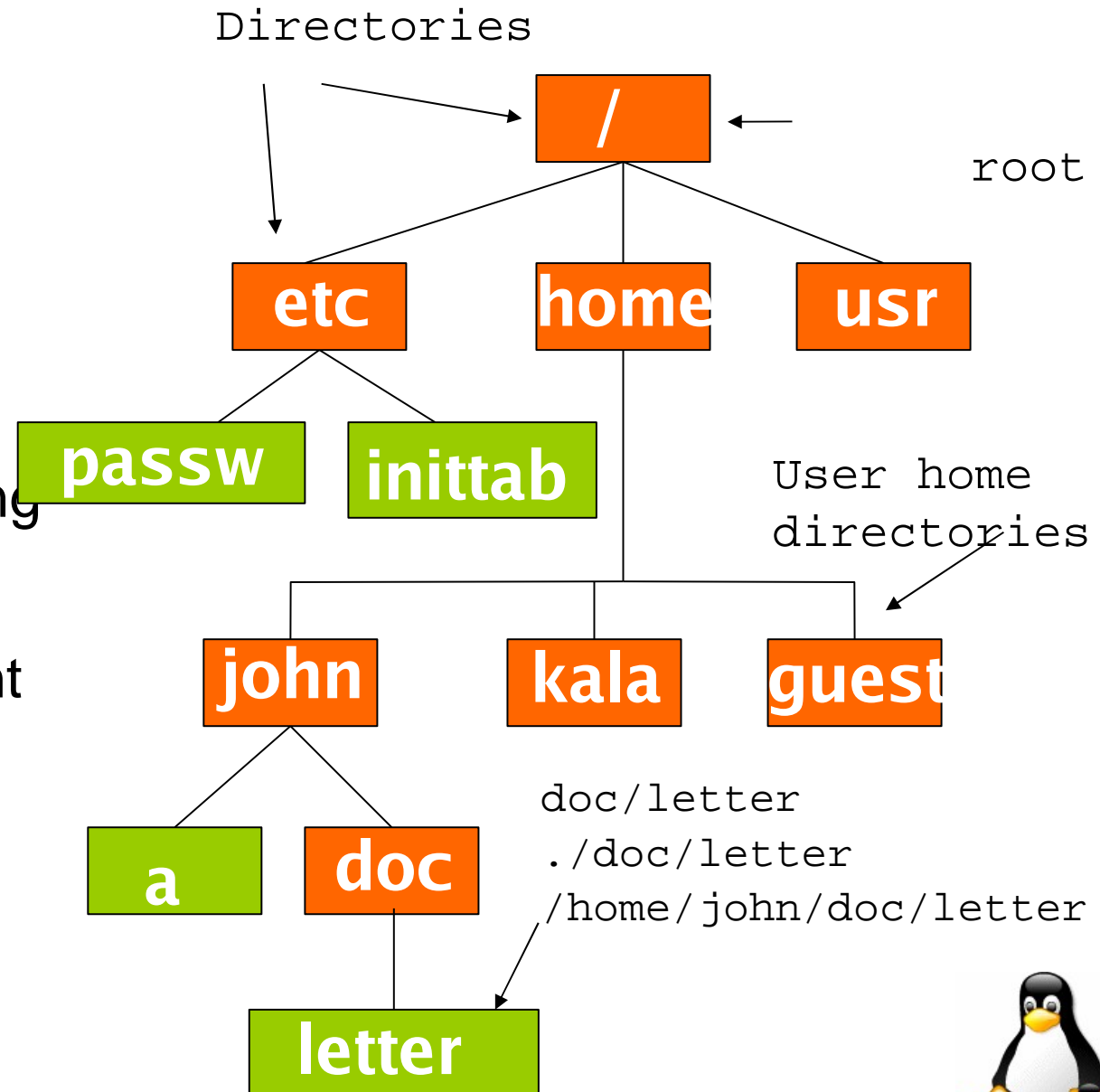
# Some special file names

- **Some file names are special:**
  - / The root directory (not to be confused with the root user)
  - . The current directory
  - .. The parent (previous) directory
  - ~ My home directory
- **Examples:**
  - ./a same as a
  - ../kala/x go up one level then look in directory kala for x



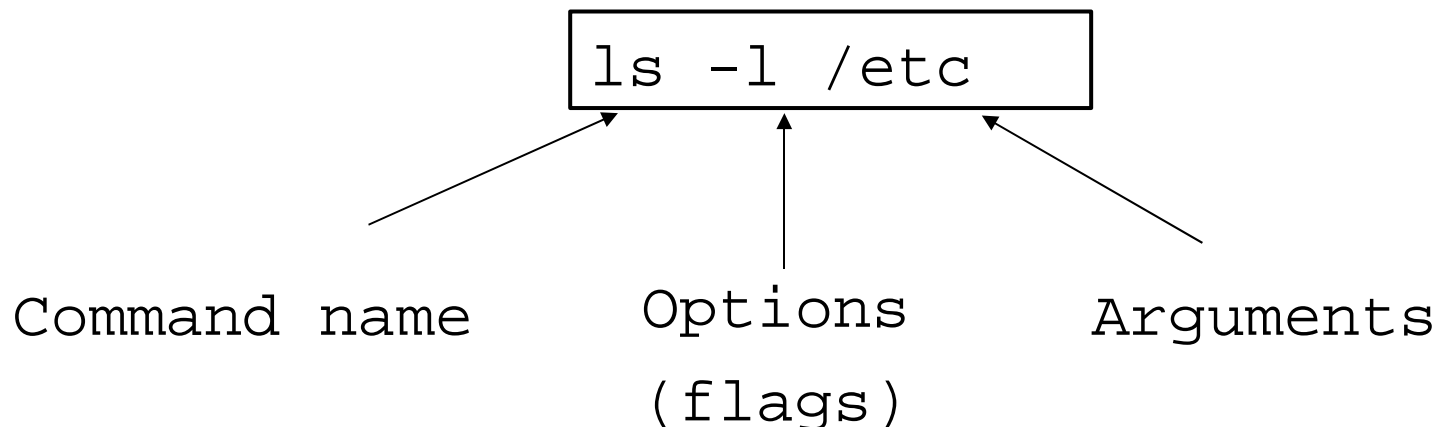
# The Current directory

- One directory is designated the *current working directory*
  - if you omit the leading / then path name is relative to the current working directory
  - Use `pwd` to find out where you are



# Linux command basics

- Commands are case-sensitive
- All commands follow this syntax
  - Command    option1    option2...    arguments
- Command options allow to control a command
  - A single dash and are a single letter (“-l”)
  - Double dashes followed by a keyword (“--help”)

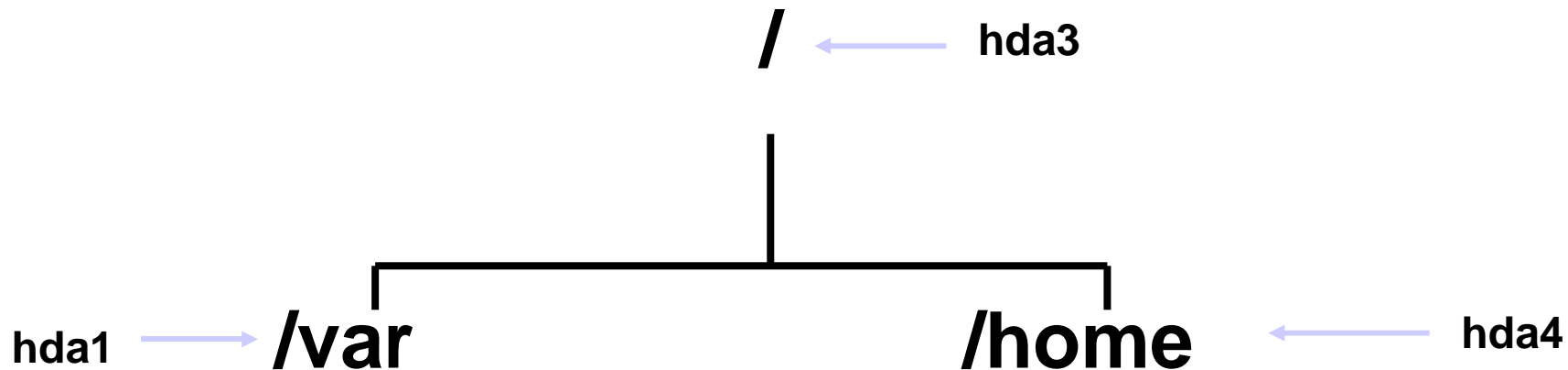


# Mounting filesystems

- File systems are mounted under a directory
- Using mount command
  - Check currently mounted file systems
  - Mount file systems

**mount -t type device target-dir**

- type ex. ext2, ext3, reiserfs, vfat ...
- device ex. /dev/hda1, /dev/hdb1, ...
- target-dir ex. /, /var, /home, /media/cdrom, ...



# Mount CD, Floppy

- `mount /media/cdrom`
- `mount /media/floppy`
  - Will work only if
    - The directories `/media/cdrom`, `/media/floppy` exist
    - There is an entry in the file **`/etc/fstab`**



# Unmounting file systems

- `umount` is used to un-mount partition
  - `umount directory`
  - `umount device`
  
- Example
  - `umount /media/floppy`
  - `umount /dev/fd0`



# Linux Club Website



Karunya Linux Club



[HOME](#)

[ACTIVITIES](#)

[RESOURCES](#)

[DOWNLOADS](#)

[NEWS](#)

[LINKS](#)

[FORUM](#)

[MEMBERS](#)

[ABOUT KARUNYA](#)

## Java

[J2SE\(TM\) Development Kit 5.0](#)

[J2SE\(TM\) Development Kit 5.0 - Installation Instructions](#)

Search This Site

Google™  
Site-Flavored BETA

Custom Search

## Utilities

[Adobe Acrobat Reader 7.0](#)

[Flash player](#)

[IPX Utils](#)

[Ncpfs](#)

[Novell Netware Client](#)

[Kchm viewer](#)

[Unrar](#)

[Kernel-module-ntfs-2.6.11-1.1369](#)

[Mp3 lame library](#)

[compat-libstdc++-7.3-2.96.118.i386.rpm](#)

[Mplayer](#)

[Mplayer plugin](#)

[Real Player](#)

[Xmms Player 1.2.10-9.1.1](#)

[Xmms Mp3 plugin](#)

[Xmms skins](#)

[Yahoo Messenger](#)



# Thank You



[www.karunya.ac.in/linuxclub](http://www.karunya.ac.in/linuxclub)