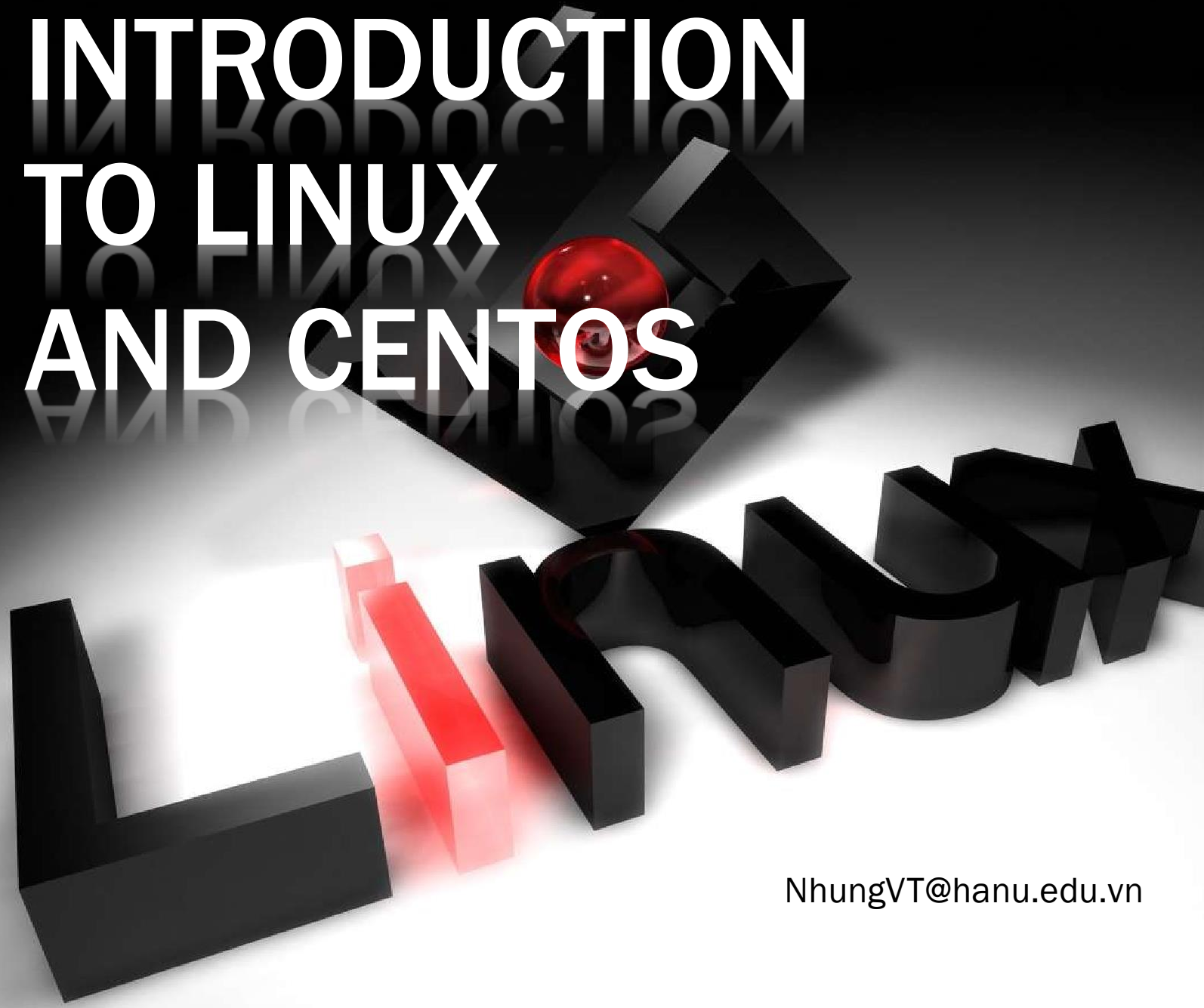
INTRODUCTION TO LINUX AND CENTOS



NhungVT@hanu.edu.vn

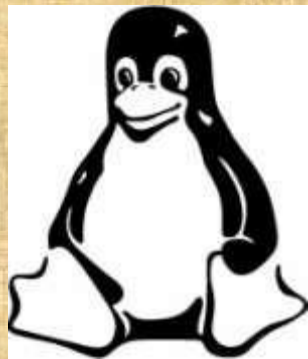
OPERATING SYSTEM

An operating system, or OS, is a software program that enables the computer hardware to communicate and operate with the computer software. Without a computer operating system, a computer would be useless.

E.g.. Linux

WHAT IS LINUX

- Linux is a generic term referring to Unix- like graphical user interface (GUI) based compute operating systems.
- It is Multi-user, Multitasking, Multiprocessor
- Has the X-Windows GUI
- Coexists with other Operating Systems
- Runs on multiple platforms
- Includes the Source Code



WHY IS IT SIGNIFICANT?

- Powerful
  - Runs on multiple hardware platforms
  - Users like its speed and stability
  - No requirement for latest hardware
- It's "free"
  - Licensed under GPL

Multiprocessing

An operating system capable of supporting and utilizing more than one computer processor.

Multitasking

An operating system that is capable of allowing multiple software processes to run at the same time.

Multithreading

Operating systems that allow different parts of a software program to run concurrently.

Multi-user

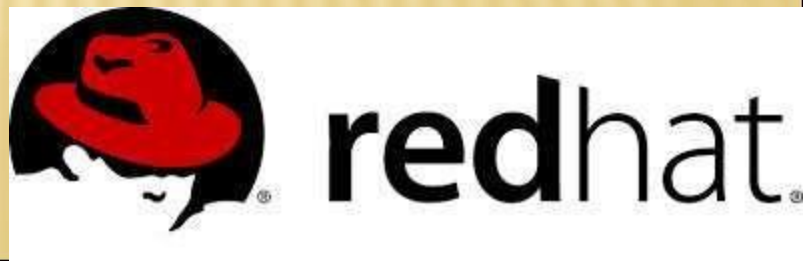
A multi-user operating system allows for multiple users to use the same computer at the same time and/or different times.

OPEN SOURCE SOFTWARE

- People improve it, people adapt it, people fix bugs. And this can happen at a speed that, compared to conventional software development, seems **astonishing.**

LINUX DISTRIBUTIONS

- ubuntu
- Linux mint
- Debian
- Fedora
- Red hat
- SuSE
- Mandriva



UBUNTU

- **Well Known Distribitiom**
- **Super Desktop and Server**
- **GNOME2 Desktop**
- **Relaese Every 6 month new update**

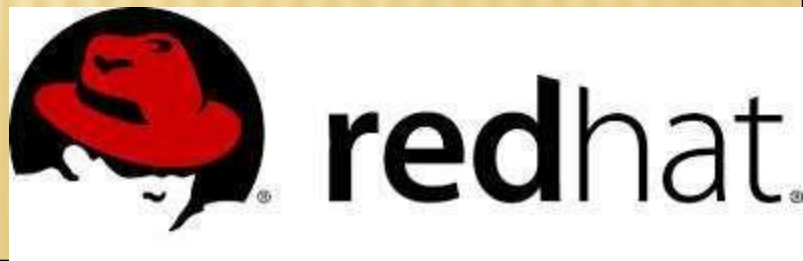
redhat

LINUX MINT

- **Mint is Linux Distributor built on top of ubantu.**
- **same package.**
- **Include media codecs.**
- **Traditional desktop.**
- **Automatically update.**

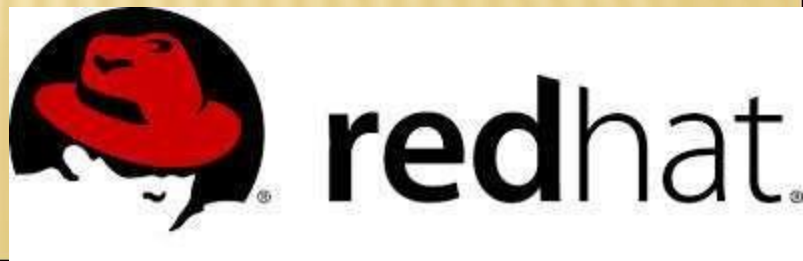
DEBIAN

- **Debian Project has operating since 1993.**
- **Slower camper to ubantu and mint.**
- **Frequently updated.**
- **User Friendly.**



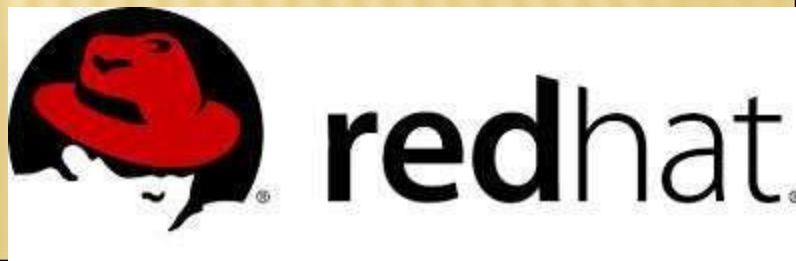
FEDORA

- **Easy to install Graphic driver.**
- **Use Bleeding Edge.**
- **3GNOME Desktop.**
- **Good performance.**



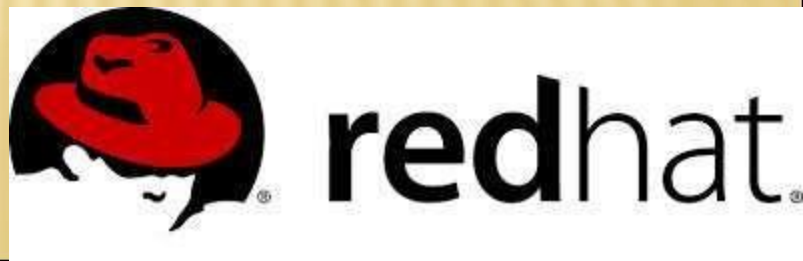
RED HAT

- **One of the earliest players in the game.**
- **Red Hat now position itself strongly in the business market.**
- **Super Desktop and Server.**
- **Stable Platform.**



SUSE

- **Sponsored by Red het..**
- **SuSE Perchaed By novell in 2003.**
- **Good Perfomance.**
- **Vary fast.**
- **10% used .**



WHAT ARE THE MAJOR ONES?

- **Red Hat: One of the earliest players in the game, Red Hat now position itself strongly in the business market. It has created a community-supported distribution, fedora Core, which is the choice of many for desktop use.**

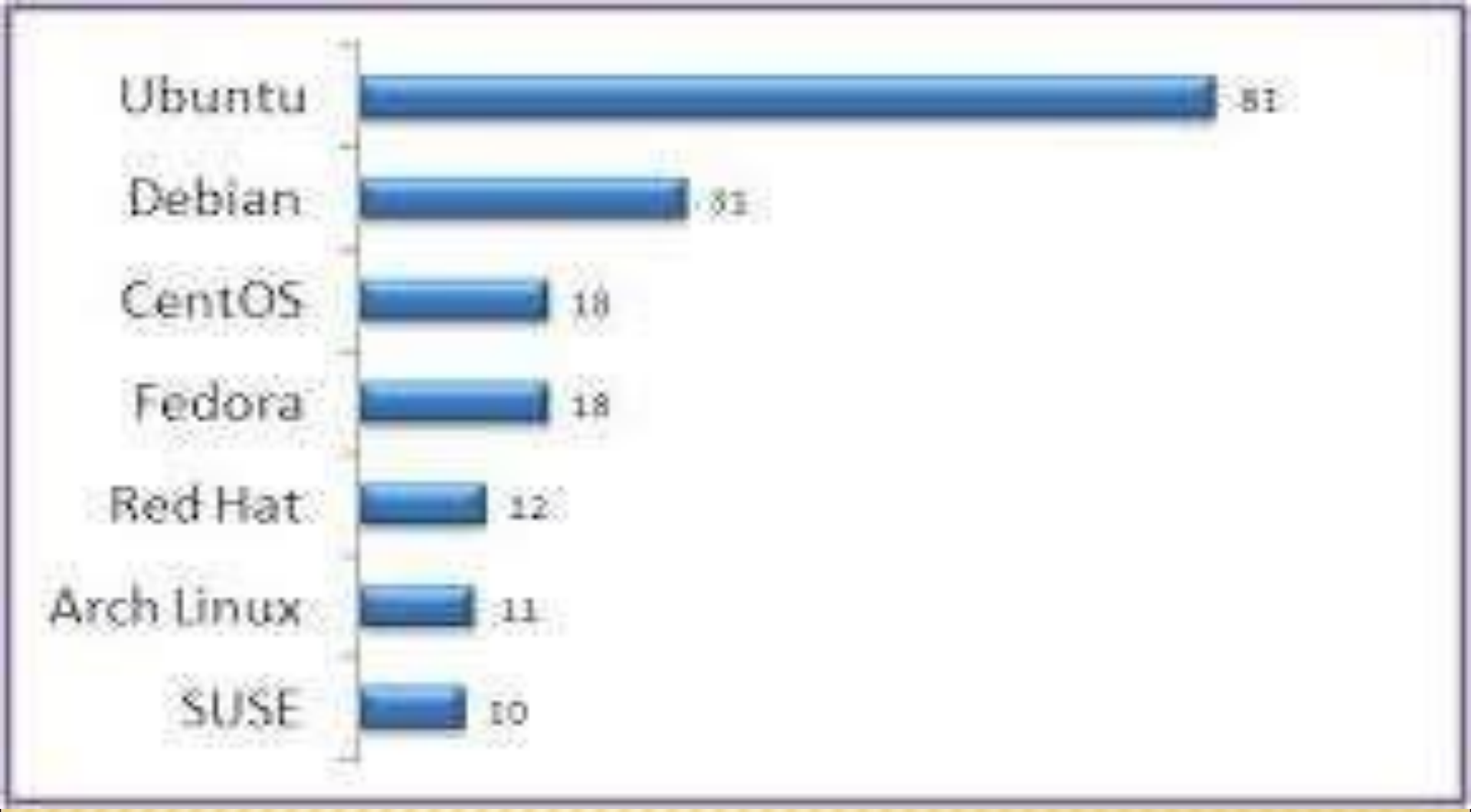
- **Debian: The most popular community-created distribution. Debian is an excellent choice for server environments. Debian has also been used as the base for many specialist distributions**

- **Ubuntu: Desktop usability, out of the box. Taglined "Linux for human beings," Based on Debian.**

- **SUSE: Novell's answer to Red Hat, comes in "enterprise" and a community-based Open SUSE**

- **All Distributions have their respective strengths.**

redhat.


Ubuntu
51
Debian
31
CentOS
18
Fedora
18
Red Hat
12
Arch Linux
11
SUSE
10

redhat.

QUESTIONS

1- How many Linux distributions are there? Name them.
2- Name Linux distros are mostly used? State reasons why?

INTRODUCTION TO CENTOS

- A stable, predictable, manageable and reproducible platform derived from the sources of Red Hat Enterprise Linux (RHEL).
- CentOS Linux is no-cost and free to redistribute.
- CentOS Linux is developed by a small but growing team of core developers, supported by an active user community including system administrators, network administrators, managers, core Linux contributors, and Linux enthusiasts from around the world.
- Over the coming year, the CentOS Project will expand its mission to establish CentOS Linux as a leading community platform for emerging open source technologies coming from other projects such as OpenStack.

WHY DID WE CHOOSE LINUX FOR INTERNET

- **Was available with all necessary Internet software 6 years back when Microsoft Windows was not ready for Internet.**

- **Low cost compared to any other alternative. Sun Solaris, Novell, MS Windows, etc.**

- **Extremely reliable.No reboots in 450+ days.**

- **Easy to setup. Takes 4 easy steps to setup a mail server. Download a CD, Burn it, Boot from it and the server is ready for adding users and setting passwords.**

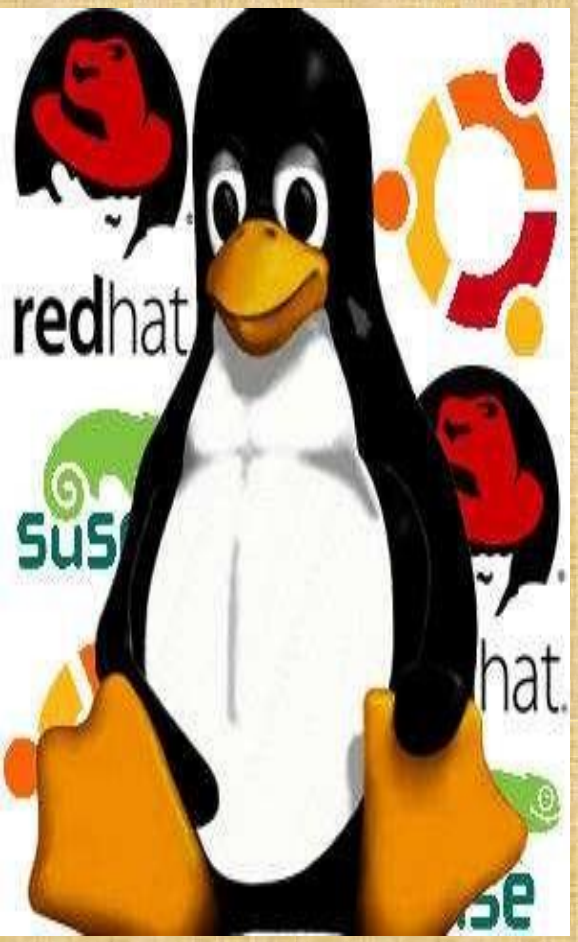
- **Lower hardware requirements. Pentium computer can act as a fast mail server for 30 users.**

LINUX PROVIDE SECURITY

As there is a limited access of user to basic files and folders, in Linux network
it provide security to user's privacy.
Without disclosing the secured data, Linux acts as a efficient server.

LINUX IS VIRUS FREE!!

Linux is "virus- free" in that there are essentially no viruses for Linux in the wild, although research viruses certainly do exist.



There are other reasons, of course.

"Normal" user accounts have much more limited access to the rest of the system, so making the corruption of system binaries much harder.

Many distributions provide intrusion-detection software for detecting binary changes.

Distributions release regular updates, which means a virus will be overwritten in a relatively short timeframe.

Mandatory access controls are becoming more popular, limiting what a virus can do even if it did infiltrate a system binary.


LINUX VS
WINDOWS

STATISTICS

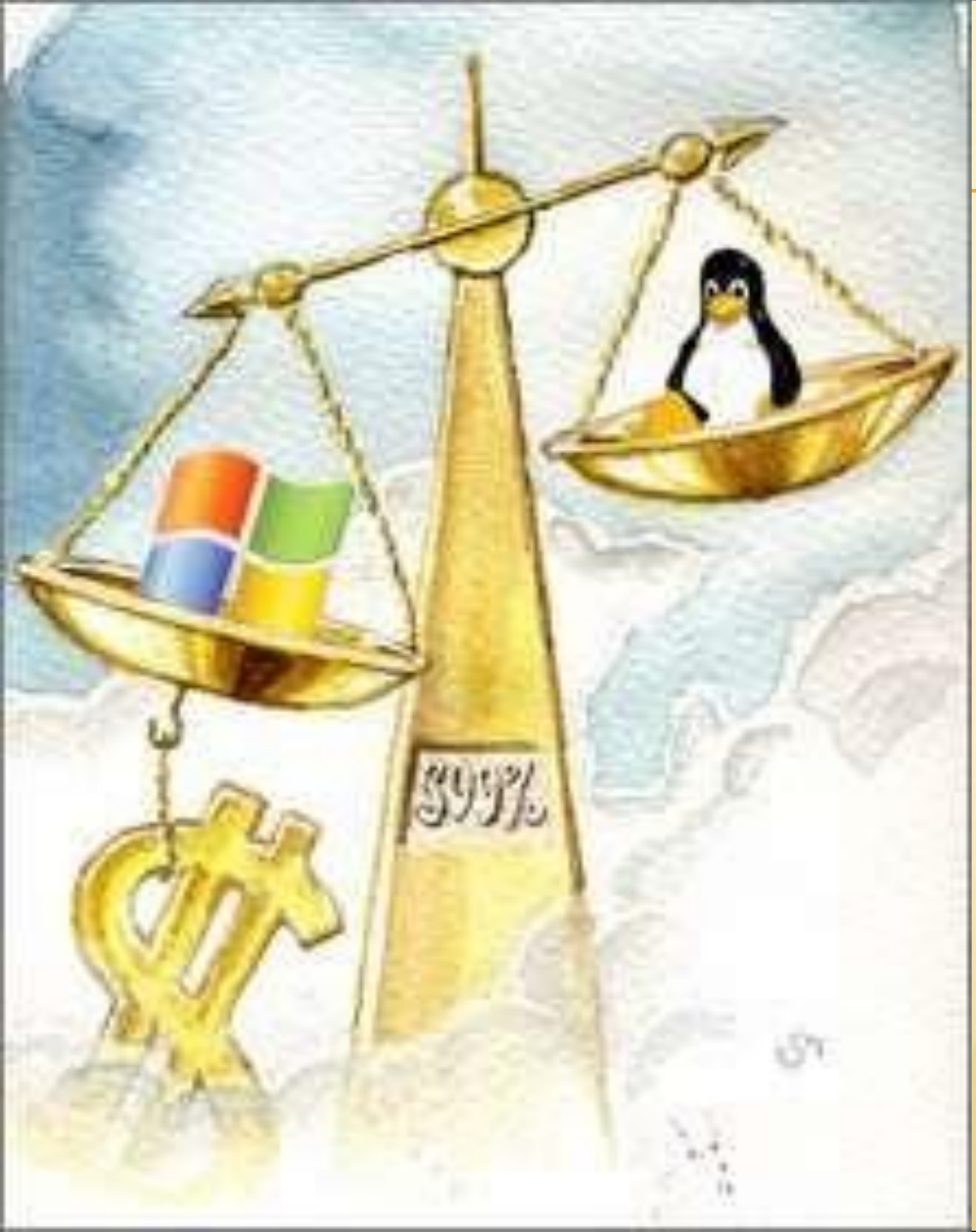
Evans Data survey in 2004 says,"don't be surprised when Linux overtakes Windows to become the main focus for developers."

Linux servers made up more than 11 percent of all servers shipped in India in the first quarter

Revenue from sales of Linux-based servers surged 90 percent in the fourth quarter 2002.

Percentage growth in the number of servers number up to June 30, 2009
Linux servers = 48%
Microsoft servers = 13%

MICROSOFT AND LINUX ARE STILL, THE TWO MOST POPULAR OPERATING SYSTEMS..



LINUX IS CHEAPER

TABLE SHOWING COST DIFFERENCE

COST		
	LINUX	WINDOWS
Online Downloads	Free	Not Available
Retail Price, CD	$50	$300

LINUX APPLICATIONS FOR SERVERS

- **All common Internet services available – Mail, Web, DNS, etc.**
- **Easy administration using web based interface**
- **Very low resource utilization. A 486 66MHz can be your firewall**
- **No cost to setup a server. As easy as download a CD and install.**
- **Lower maintenance. Keeps running for years.**

LINUX VS. WINDOWS

- Keeping up to date By Upgrading

Linux upgrades faster than Windows

- Compatibility

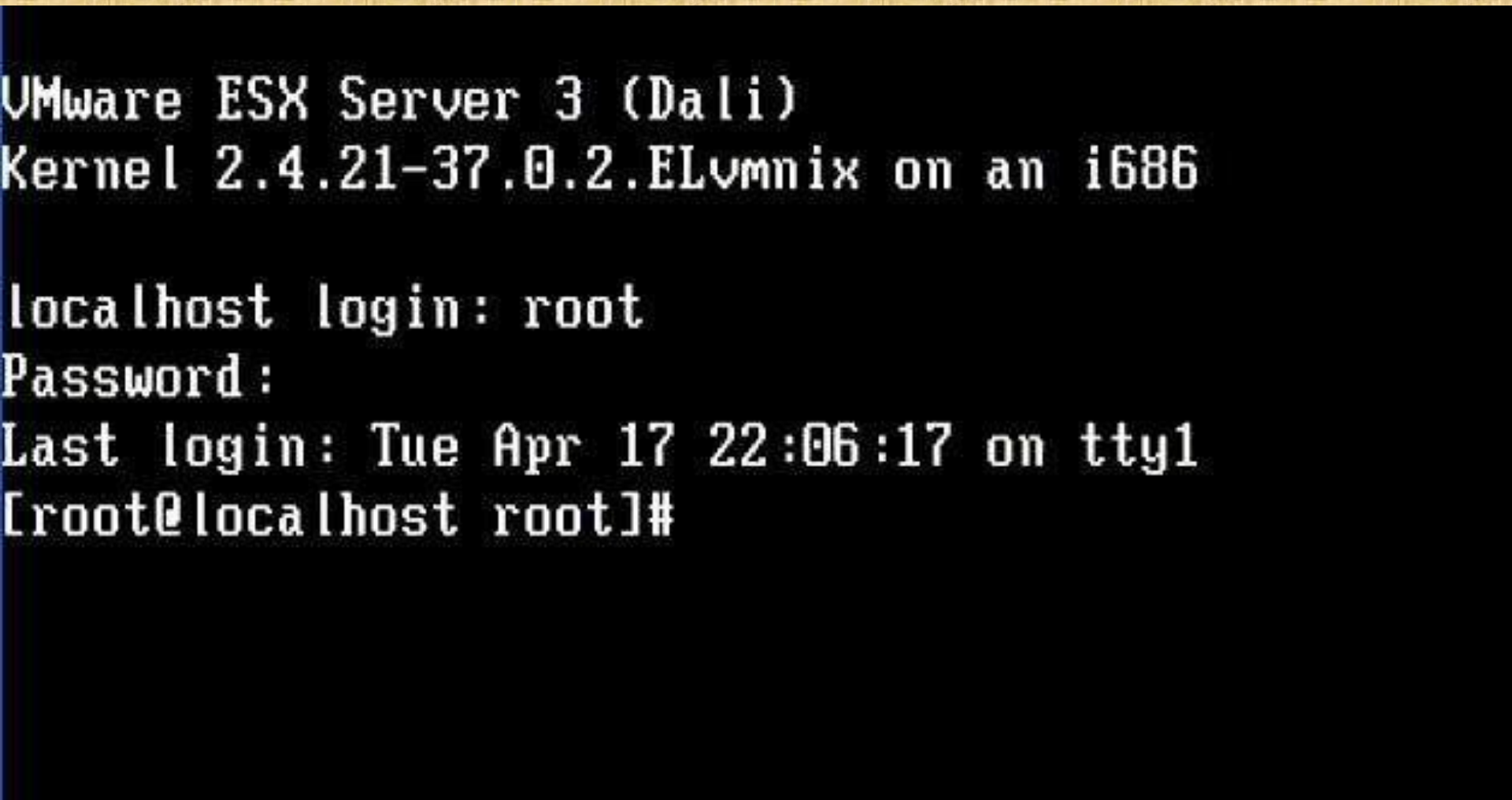
Linux is Backward Compatible unlike Windows

QUESTIONS

- 3- Why Linux is mostly used for deploying servers?
- 4- Compare Linux vs Windows
- 5- What is Xwindows? Name some variants of Xwindows?

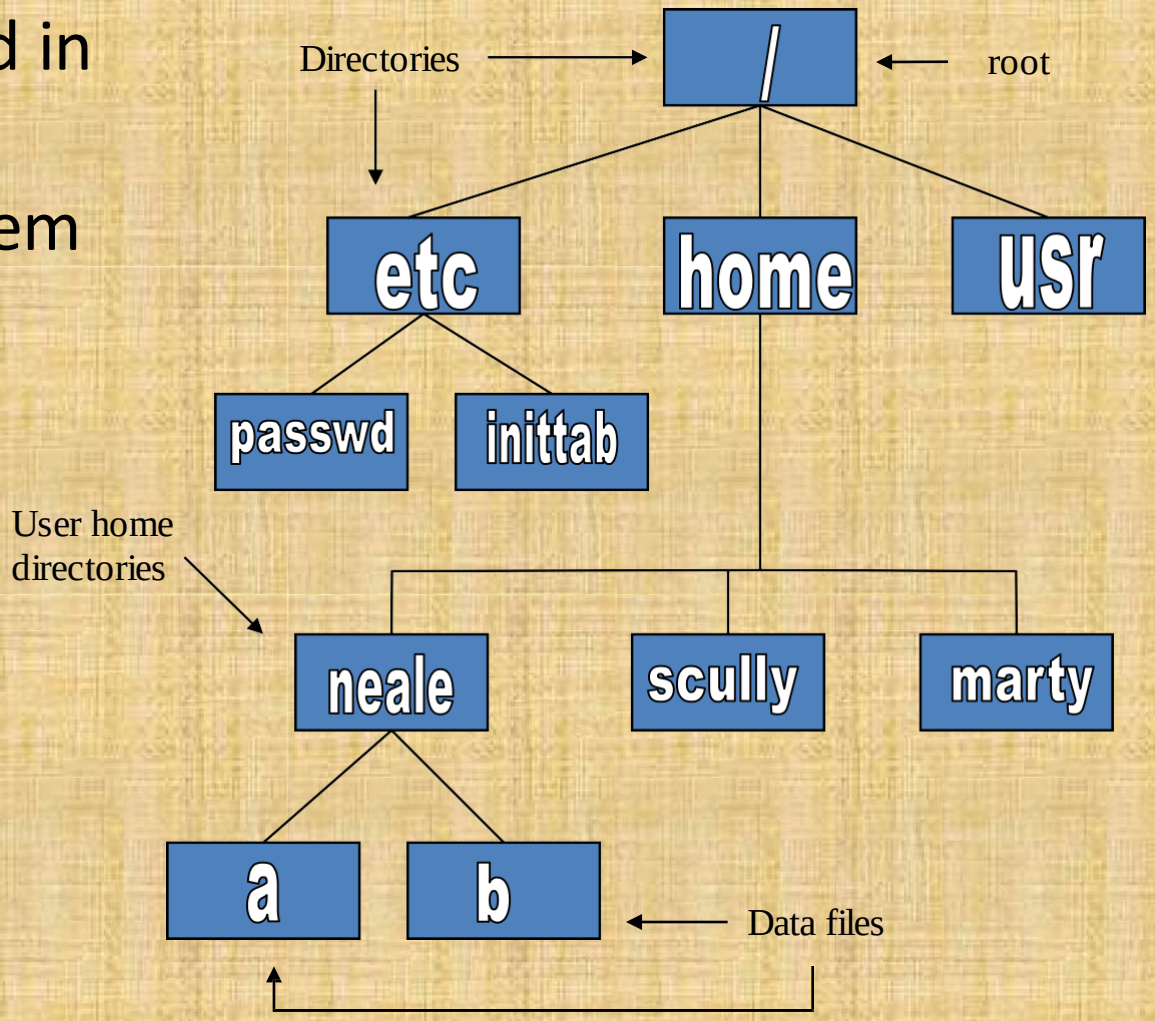
LINUX COMMANDS

LOGIN


VMware ESX Server 3 (Dali)
Kernel 2.4.21-37.0.2.ELvmnix on an i686
localhost login: root
Password:
Last login: Tue Apr 17 22:06:17 on tty1
[root@localhost root]#

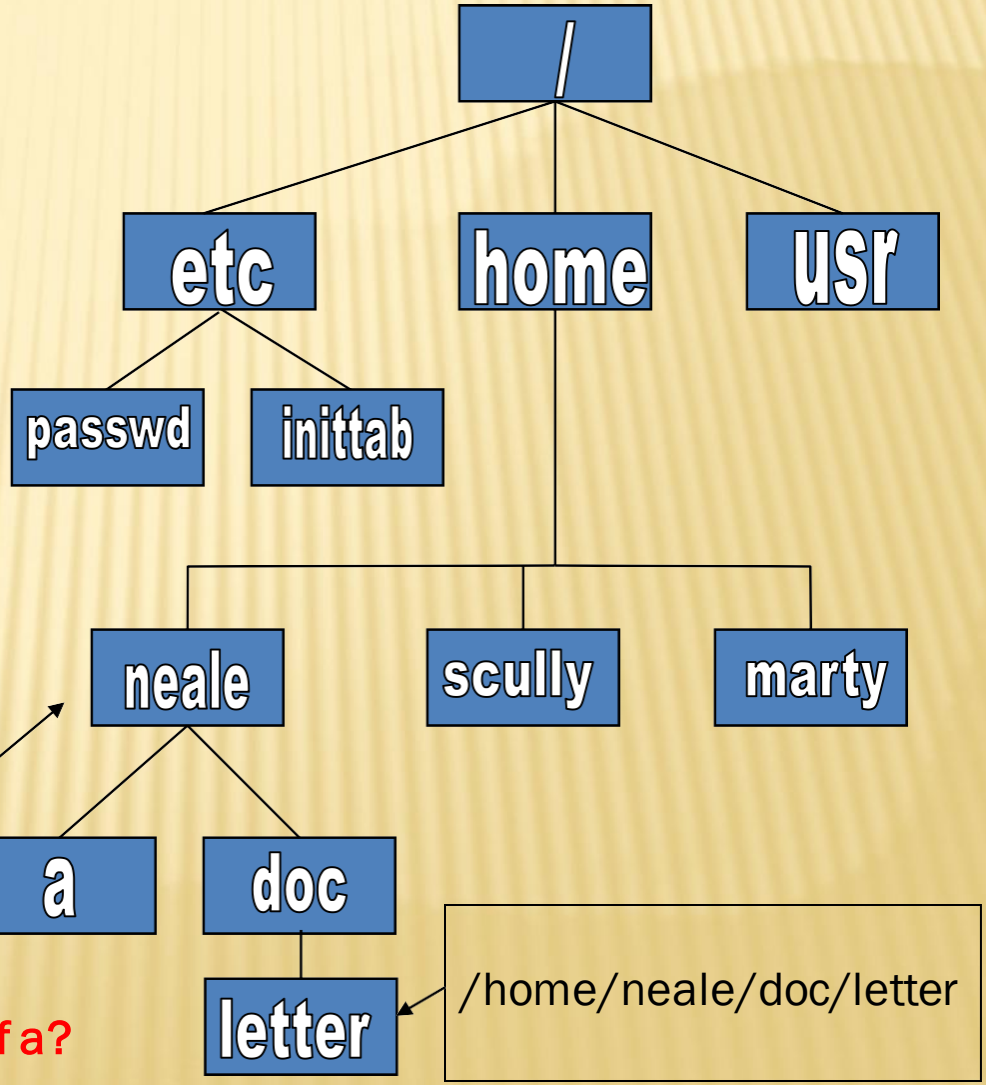
LINUX FILE SYSTEM BASICS

- Linux files are stored in a single rooted, hierarchical file system
  - Data files are stored in directories (folders)



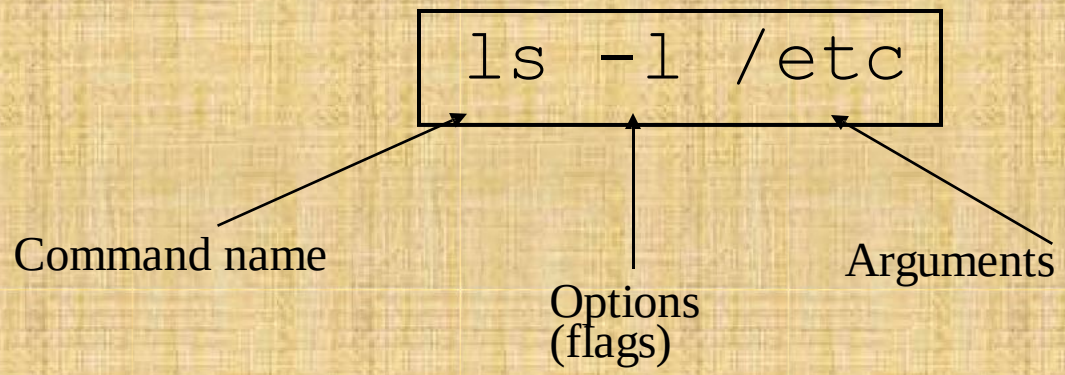
THE CURRENT DIRECTORY

- 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

- To execute a command, type its name and arguments at the command line



Basic Linux Commands

- File Handling
- Text Processing
- System Administration
- Process Management
- Archival
- Network
- File Systems
- Advanced Commands

#1)**man** <command> shows
all information about the command

#2)<command> **help** shows
the available options for that command

File Handling commands

- **mkdir** – make directories Usage: mkdir [OPTION] DIRECTORY...
  eg. mkdir prabhat
- **ls** – list directory contents Usage: ls [OPTION]... [FILE]... eg. ls, ls l, ls prabhat
- **cd –** changes directories Usage: cd [DIRECTORY] eg. cd prabhat

File Handling(contd...)

- **pwd print**

name of current working directory

Usage: pwd

- **nano** –a programmers text editor
- Usage:nano test.txt

cp – copy files and directories

Usage: cp [OPTION]... SOURCE DEST

eg. cp sample.txt sample_copy.txt cp sample_copy.txt target_dir

mv – move (rename) files Usage: mv [OPTION]... SOURCE DEST

eg. mv source.txt target_dir mv old.t
new.txt

File Handling(contd...)

File Handling(contd...)

- **rm** remove files or directories

Usage: rm [OPTION]... FILE...

eg. rm file1.txt

- **find** – search for files in a directory hierarchy

Usage: find [OPTION] [path] [pattern]

eg. find file1.txt, find name file1.txt

- **history** – prints recently used comma

Usage: history

Text Processing

- **cat** – concatenate files and print on the standard output

Usage: cat [OPTION] [FILE]...

eg. cat file1.txt file2.txt cat n file1.txt

- **echo** – display a line of text Usage:

echo [OPTION] [string] ... eg. echo I love India

echo $

Text Processing(contd...)

- **grep** print

lines matching a pattern

Usage: grep [OPTION] PATTERN [FILE]...

eg. grep i

apple sample.txt

- **wc** print

the number of newlines, words, and bytes in files

Usage: wc [OPTION]... [FILE]...

eg. wc file1.txt wc L

file1.txt

System Administration

- **chmod** – change file access permissions

Usage: chmod [OPTION] [MODE] [FILE] eg. chmod 744 calculate.sh

- **chown** – change file owner and group

Usage: chown [OPTION]... OWNER[:[GROUP]] FILE...

eg. chown remo myfile.txt

System Administration (contd...)

- **su – change user ID or become superuser**

Usage: su [OPTION] [LOGIN]

eg. su remo, su

- **passwd – update a user's authentication tokens(s)**

Usage: passwd [OPTION] eg. passwd

- **who – show who is logged on**

Usage: who [OPTION] eg. who , wh

, who q

Advanced Commands

- **reboot** – reboot the system

Usage: reboot [OPTION]

eg. reboot

- **poweroff** – power off the system

Usage: poweroff [OPTION]

eg. poweroff

FURTHER COMMANDS

Practice commands in Lab 1&2

Finished.....