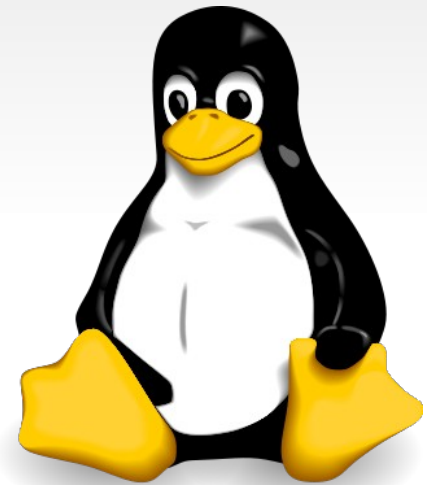


What is GNU/Linux?

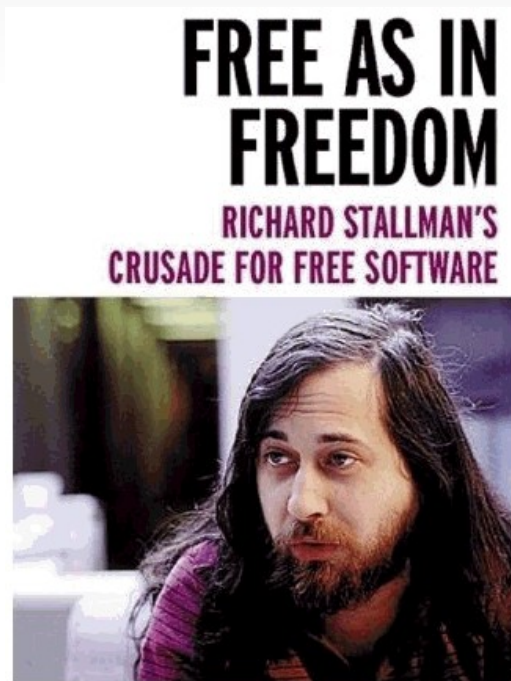
GNU/Linux is a “free” operating system

- Other operating systems:
 - Microsoft windows
 - Apple Mac OS X
 - Sun Solaris
 - And many more.....



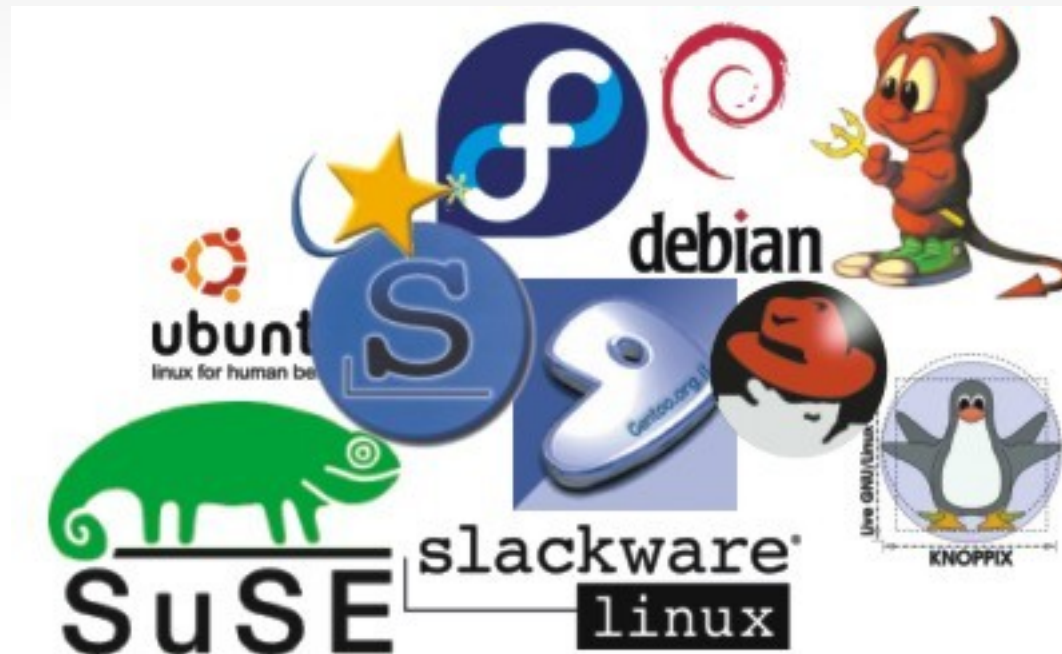
GNU/Linux history

- GNU project started by Richard Stallman in 1984 to create a “free” operating system.
- Linux kernel (base of the system) created by Linus Torvalds in 1991.



Linux Distributions

- Linux kernel + many free software applications + installer system
- Bundled on cdrom for easy install.



Why do we use linux?

- Easy access to many useful tools in bioinformatics
 - Programming: perl, python, R,C, java, bash
 - Libraries: bioperl, biopython, bioconductor (R)
 - Webservers (apache)
 - Database servers (mysql)
- Flexibility
- Stability
- Security
- Price

Why do we use linux?

We have a small cluster (180 cores) running GNU/Linux (debian) to run experiments.

It is easier to work with the same operating system in both cluster and desktop computers.

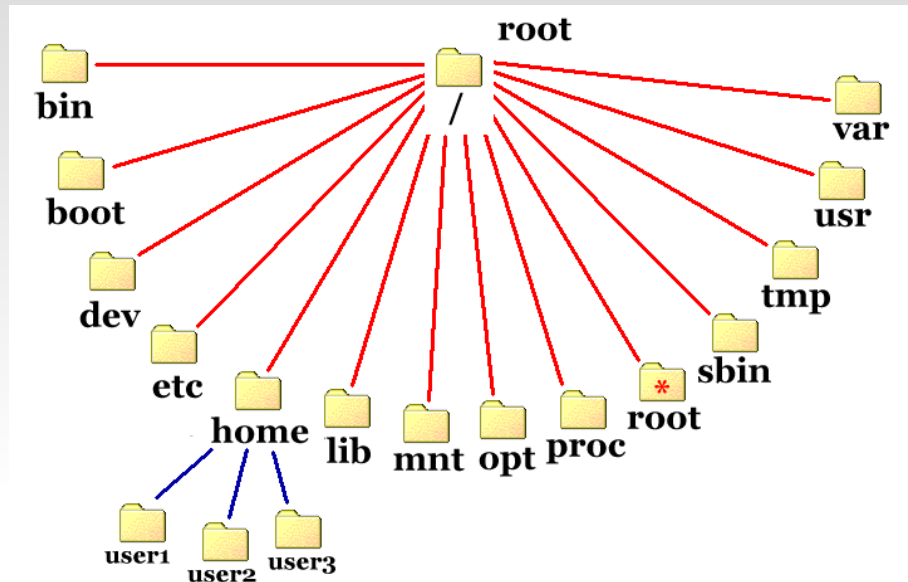
- GNU/Linux is widely used in High Performance Computing (HPC) environments, it is used in most supercomputers.

TOP500 OPERATING SYSTEM FAMILY STATS 11-2009

| Operating system Family | Count | Share | %Processor Sum |
|-------------------------|-------|---------|----------------|
| Linux | 446 | 89.20 % | 3253501 |
| Windows | 5 | 1.00 % | 59072 |
| Unix | 25 | 5.00 % | 124274 |
| BSD Based | 1 | 0.20 % | 1280 |
| Mixed | 23 | 4.60 % | 1226500 |
| Totals | 500 | 100% | 4664627 |

SOURCE: <http://www.top500.org/stats/list/34/osfam>

Linux Filesystem



- Every path starts in /
- No C: or D: for disks like windows
 - C:\Documents and Settings\username\Desktop in windows
 - /home/username/Desktop in linux

Software in classroom computers

- Gedit text editor
- Firefox web browser
- Chrome web browser
- OpenOffice (Equivalent to Microsoft Office)
 - OpenOffice Word Processor (word)
 - OpenOffice Spreadsheet (excel)
 - OpenOffice Presentation (powerpoint)
- Pdf reader

Basic commandline usage

- **Listing directory contents**

ls list a directory

ls -l list a directory in long (detailed) format

- **Moving around the filesystem**

pwd print working directory, or current directory.

cd my_docs Change current directory to the subdirectory my_docs.

cd Change current directory to your HOME directory.

cd .. Change current directory to the parent directory of the current directory.

Source and more details:

http://github.com/JoseBlanca/franklin/blob/master/doc/source/ngs_workshop/cmd_primer.rst

Basic commandline usage

- **Moving, renaming, and copying files**

| | |
|-------------------------------|---|
| <code>cp file1 file2</code> | copy the file1 to file2 |
| <code>mv file1 newname</code> | move or rename a file |
| <code>mv file1 AAA/</code> | move file1 into sub-directory AAA |
| <code>rm file1</code> | remove (delete) a file |
| <code>rm -r dir1</code> | recursively remove a directory and its contents |
| <code>mkdir dir1</code> | create a directory |

- **Viewing and editing files**

| | |
|-----------------------------------|--|
| <code>cat filename</code> | Dump a file to the screen. |
| <code>less filename</code> | Browse through a file: q=quit, / search. |
| <code>head filename</code> | Show the first lines of a file. |
| <code>head -n filename</code> | Show the first n lines of a file. |
| <code>tail filename</code> | Show the last few lines of a file. |
| <code>tail -n filename</code> | Show the last n lines of a file. |
| <code>grep string filename</code> | prints all the lines in a file that contain the string |