

EN47/COMP9
Exploring Computer Science

Lecture 2

Introduction to Linux

Plan for today

The Linux operating system

Components of an OS

Manipulating the file system

Lab 1: Linux and Emacs

Linux

The **operating system** we will use in this class

Free, open source software

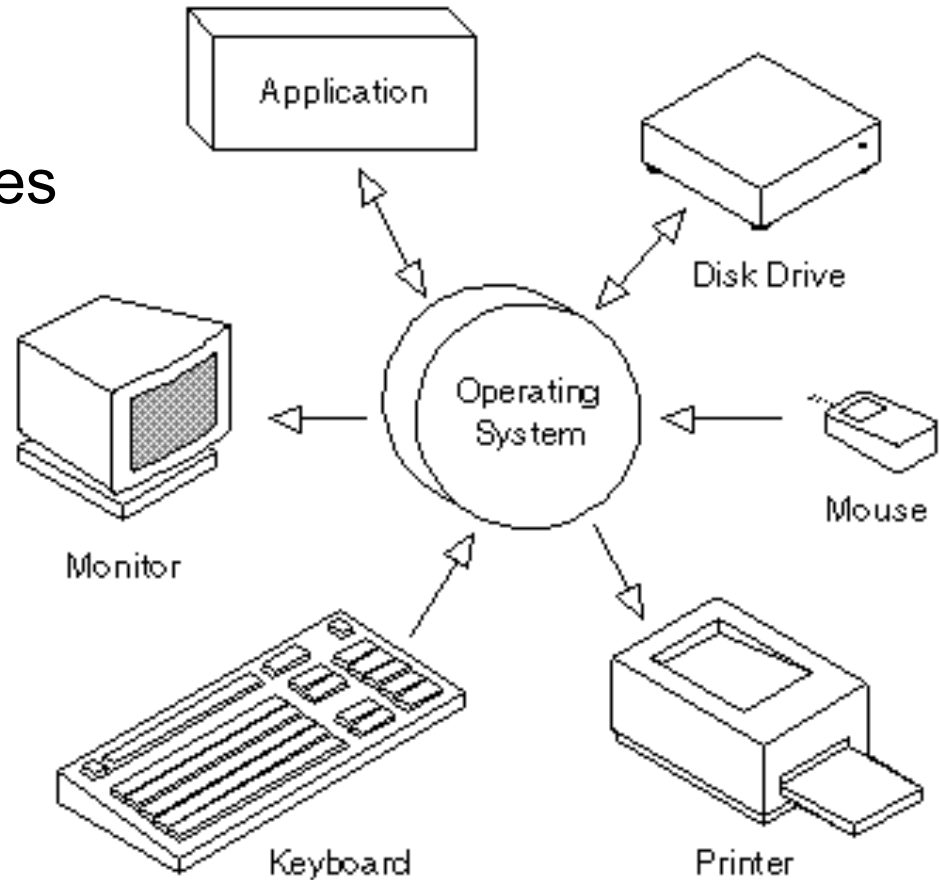
- All source code can be freely modified and redistributed under free software licenses

Operating system

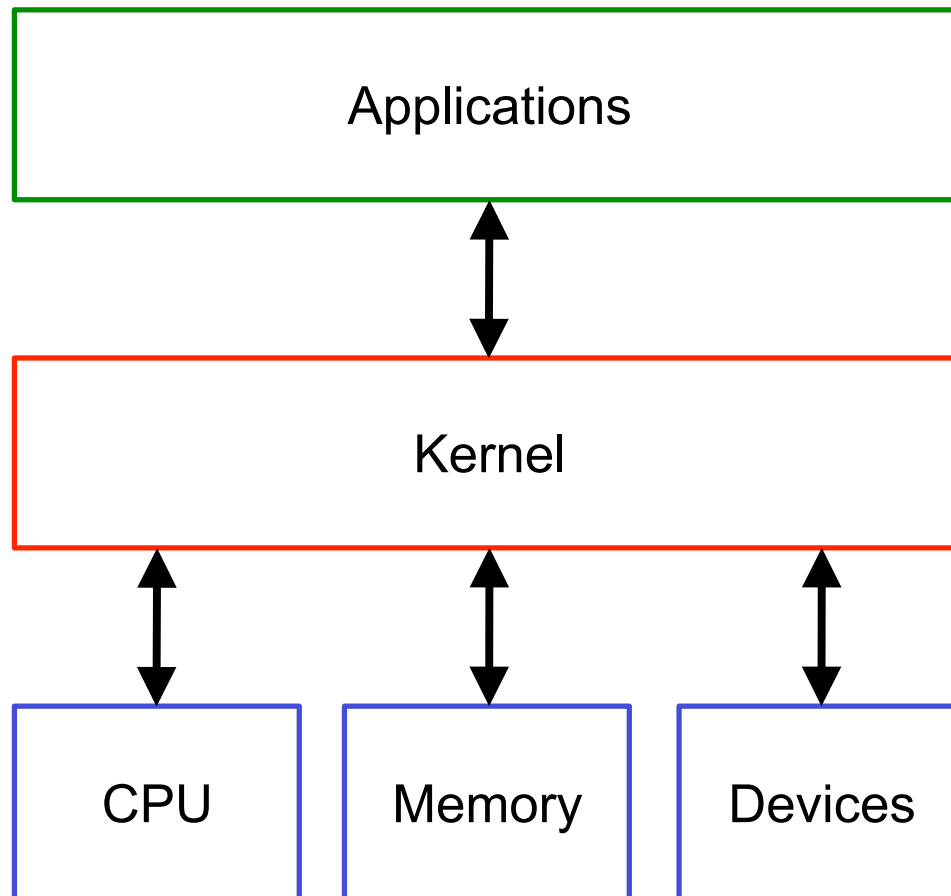
Program that

- controls hardware
- runs other programs,
- handles input/output,
- manages other devices

e.g., Windows, Mac OS,
Linux, Unix



Operating system



Linux OS

Kernel (around since 1991)

+ **shell**

+ **desktop environment**

+ **utilities** (applications)

Linux OS

Used on

- Servers
- Desktop/laptop computers (Halligan 116 & 118)
- Cell phones
- Supercomputers

“Flavors” of Linux (a.k.a. distributions) include

- Ubuntu
- Fedora (Red Hat)

Useful for...

Text editing: emacs, vi

Web browsing: Internet Explorer, Firefox

Email: WebMail, pine

Programming: g++, Eclipse

Math, graphics, gaming

Office applications

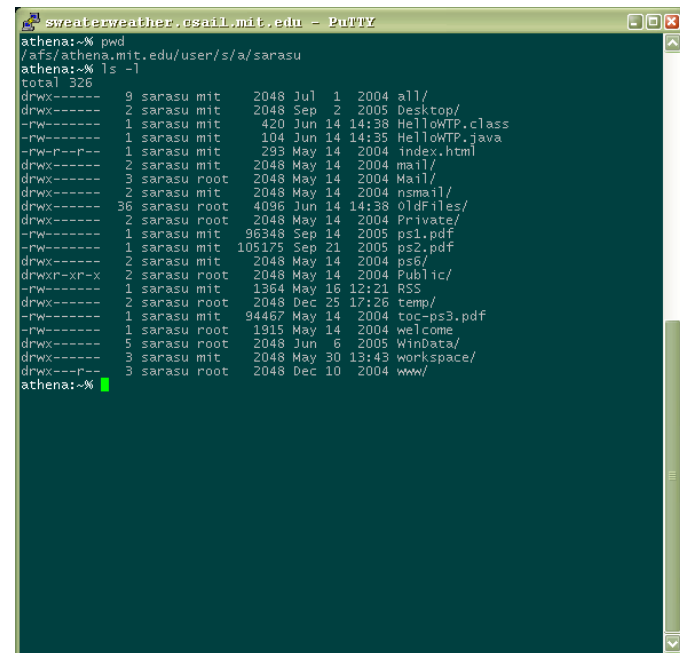
Manipulating the file system

Shell

Intermediary program between user and OS

Reads commands, sends to OS to be executed

Lets us manipulate **file system** and run programs



```
sreeterweather.csail.mit.edu - PuTTY
athena:~% pwd
/sfs/athena.mit.edu/user/s/a/sarasu
athena:~% ls -l
total 326
drwx----- 9 sarasu mit      2048 Jul  1  2004 all/
drwx----- 2 sarasu mit      2048 Sep  2  2005 Desktop/
-rw----- 1 sarasu mit        420 Jun 14 14:38 HelloWTP.class
-rw----- 1 sarasu mit        104 Jun 14 14:35 HelloWTP.java
-rw-r--r-- 1 sarasu mit        299 May 14  2004 index.html
drwx----- 2 sarasu mit      2048 May 14  2004 mail/
drwx----- 3 sarasu root      2048 May 14  2004 Mail/
drwx----- 2 sarasu mit      2048 May 14  2004 nsmail/
drwx----- 36 sarasu root     4096 Jun 14 14:38 oldfiles/
drwx----- 2 sarasu root      2048 May 14  2004 Private/
-rw----- 1 sarasu mit      96348 Sep 14  2005 ps1.pdf
-rw----- 1 sarasu mit     109175 Sep 21  2005 ps2.pdf
drwx----- 2 sarasu mit      2048 May 14  2004 ps8/
drwxr-xr-x 2 sarasu root      2048 May 14  2004 Public/
-rw----- 1 sarasu mit       1364 May 16 12:21 RSS
drwx----- 2 sarasu root      2048 Dec 25 17:26 temp/
-rw----- 1 sarasu mit     94467 May 14  2004 toc-ps3.pdf
-rw----- 1 sarasu root       1915 May 14  2004 welcome
drwx----- 5 sarasu root      2048 Jun  6  2005 Windata/
drwx----- 3 sarasu mit      2048 May 30 13:43 workspace/
drwxr--r-- 3 sarasu root      2048 Dec 10  2004 www/
athena:~%
```

File system

Consists of

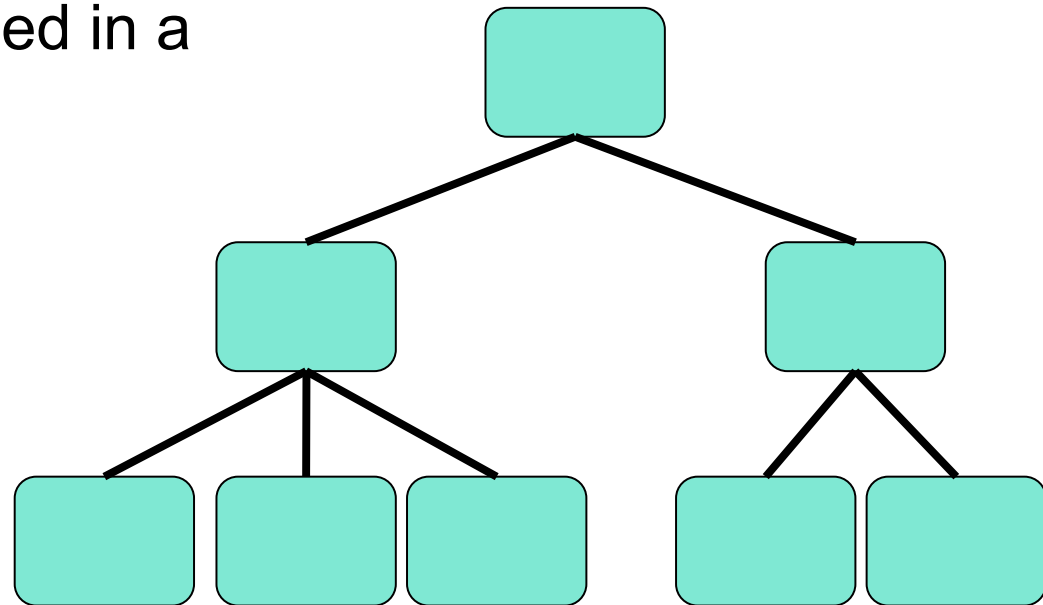
- **Files** that contain data
- **Directories** that contain files

File system

Consists of

- Files that contain data
- Directories that contain files

Directories are organized in a tree structure

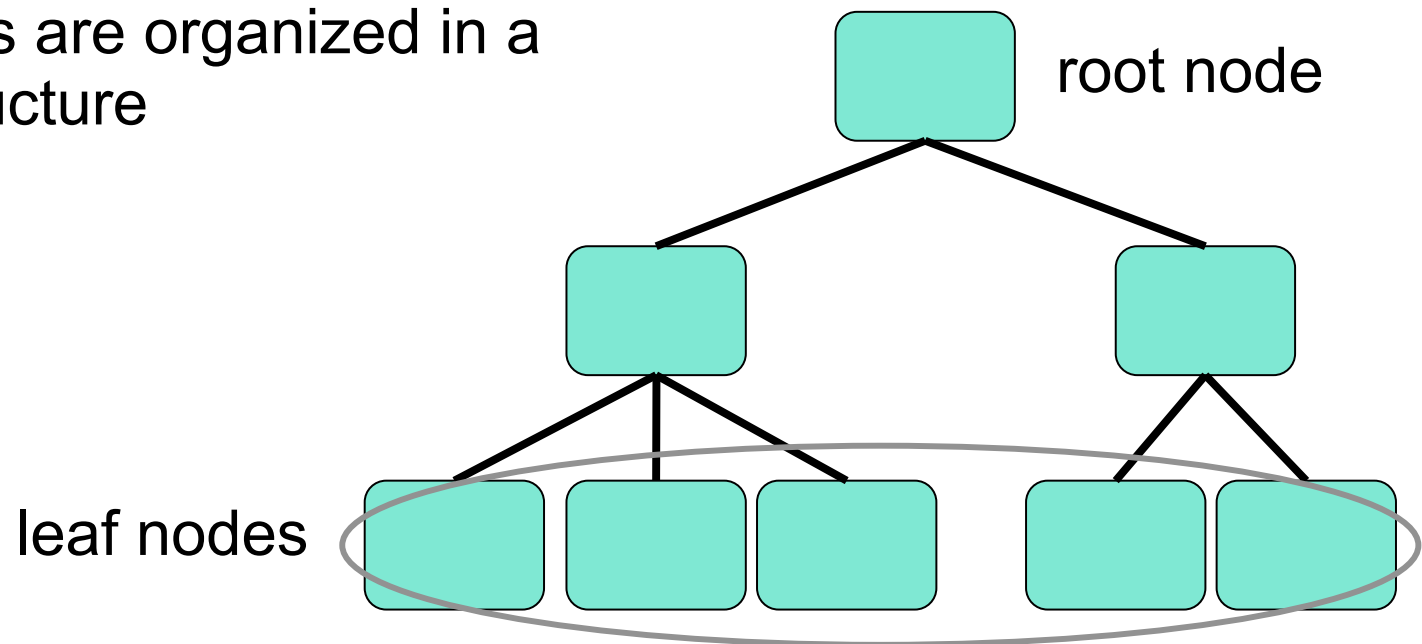


File system

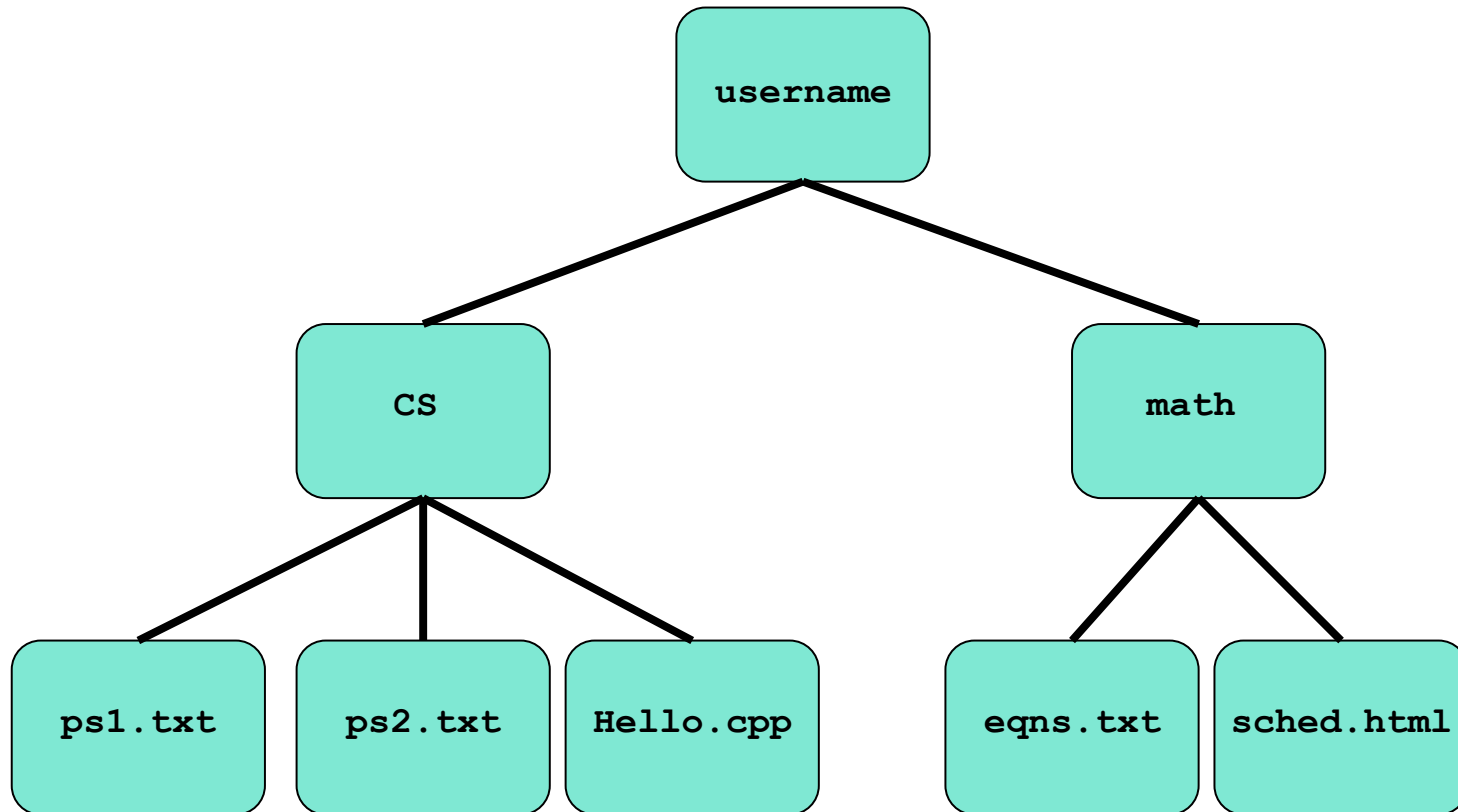
Consists of

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Trees and paths



`~username/CS/Hello.cpp`

`~username/CS/`

← refers to a file

← refers to a directory

Some common Linux commands

Getting help:

`man`

Navigating the file system:

`ls, cd, pwd`

Manipulating the file system:

`rm, cp, mv, mkdir, rmdir`

Viewing files:

`cat, more, head`

Emacs

A widely used text editor

Similar in some ways to Notepad

Will get familiar with editing files in Emacs today

Lab 0

Log in to a computer with your CS username + password

Right click the desktop and launch “Terminal”

You will see a prompt like this:

```
lab116s{username}:
```

Follow the lab handout to start entering commands