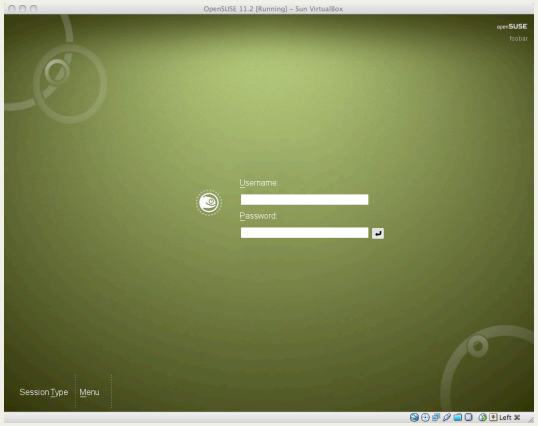
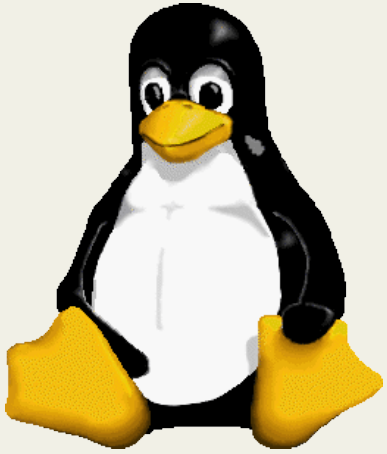


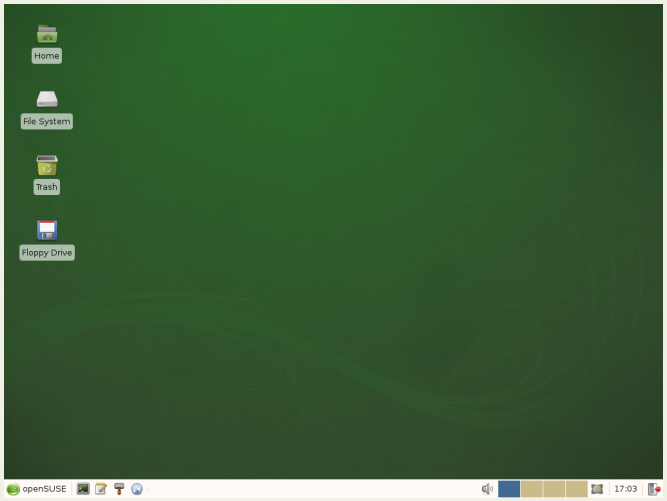
Linus Torvalds

CS 1 Linux Tutorial

October 4, 2013



Linux mascot



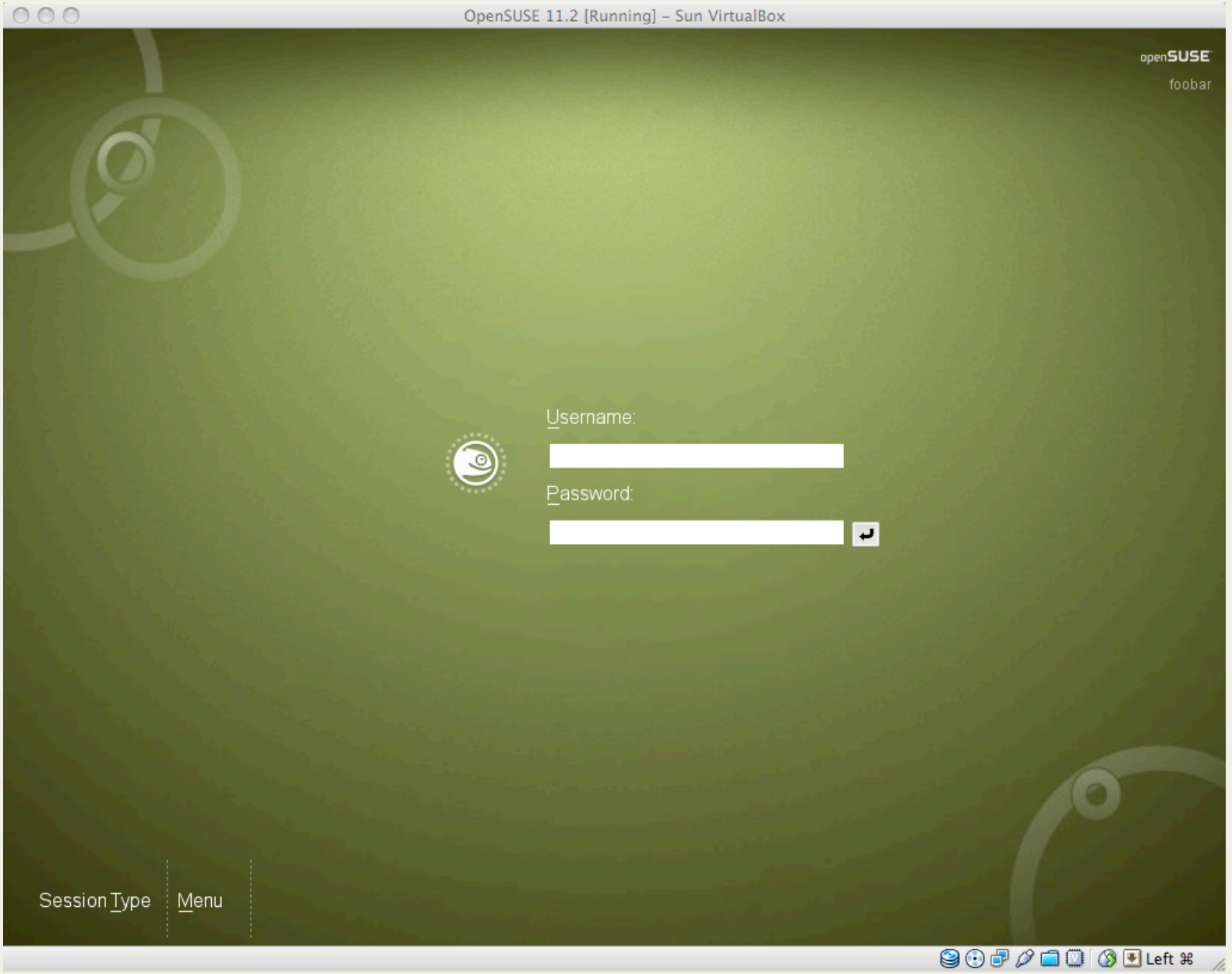
Linux: Introduction

- You've probably heard of the Windows and Mac OS X operating systems
- Linux is another popular one (it’s free too!)
- Most of the CMS cluster machines run Linux
  - CMS cluster = computer lab in Annenberg room 104
- Linux comes in many shapes and sizes (called "distributions")
- *e.g.* Ubuntu, Fedora, Arch, Gentoo, Debian …
- CS Cluster uses “OpenSUSE”
  - at least this year ;-)

Linux: Introduction

- Provides a terminal, AKA a *shell*
  - A text-based interface to the operating system
  - Also present on Mac OS (Terminal.app) and Windows (console)
    - Mac commands are almost identical
    - but Windows commands are completely different
- Also provides a GUI (graphical user interface)
  - windows, desktop etc.

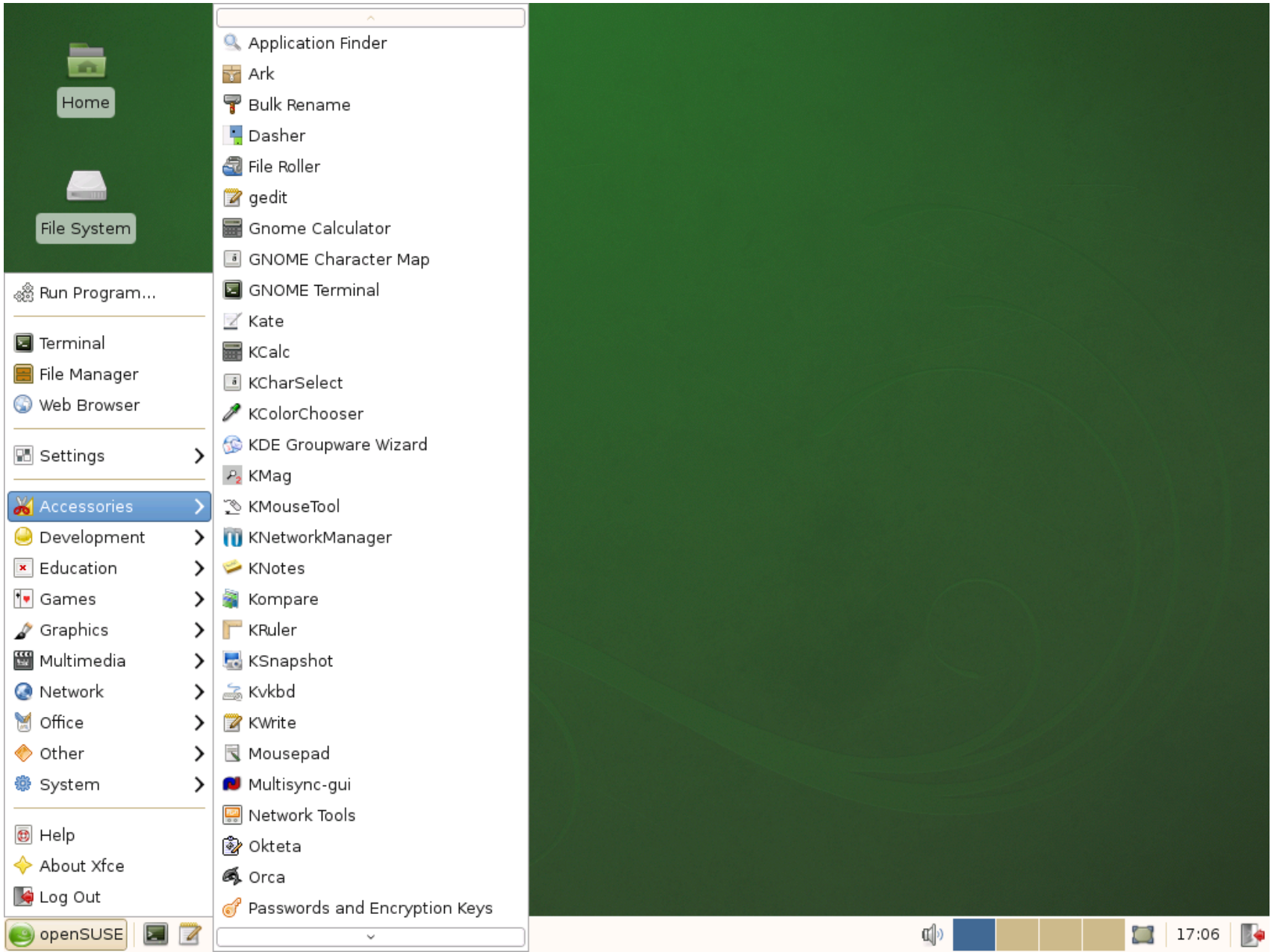
Login screen



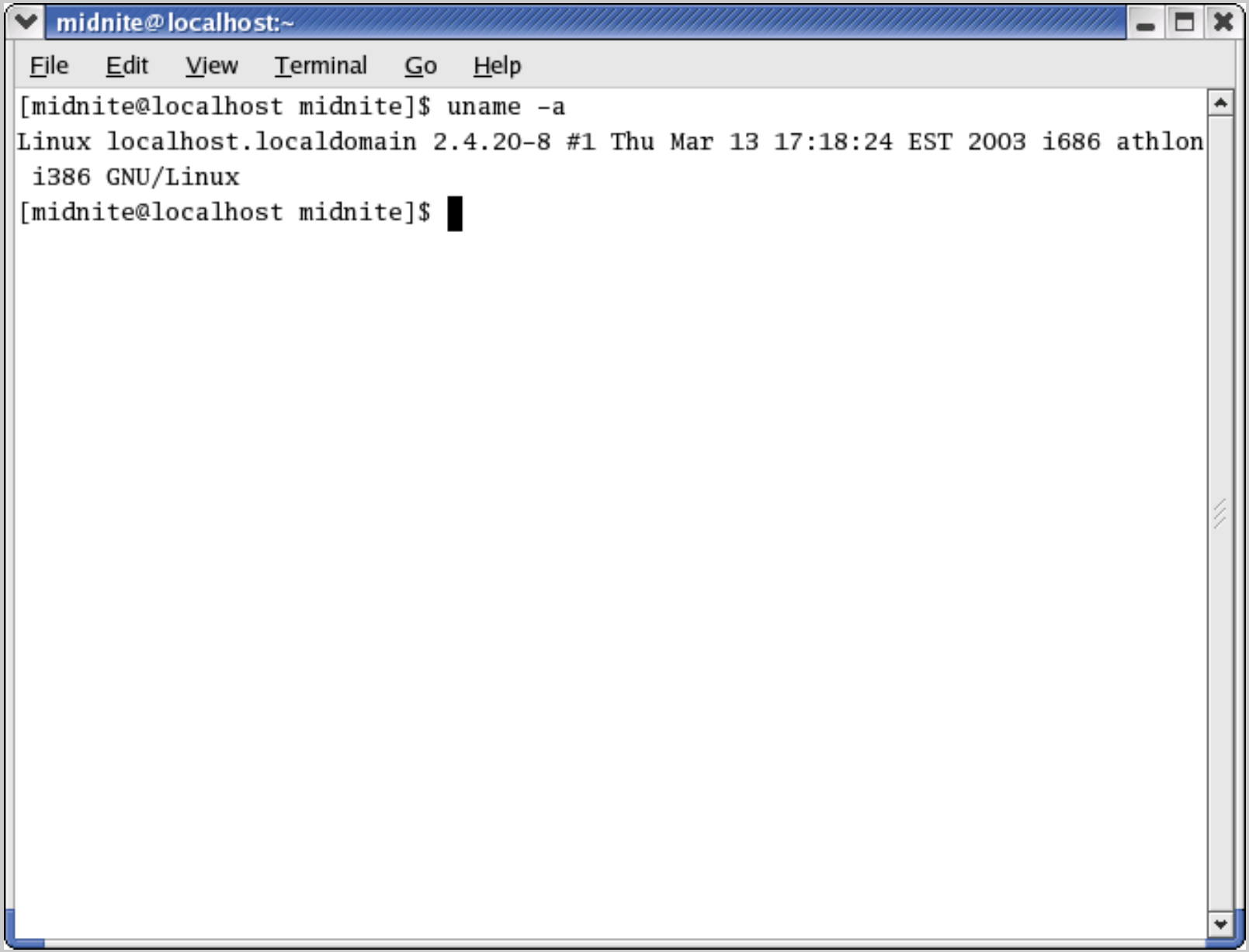
What you'll see

Look for applications

Look for applications



Terminal


midnite@localhost:~
File Edit View Terminal Go Help
[midnite@localhost midnite]$ uname -a
Linux localhost.localdomain 2.4.20-8 #1 Thu Mar 13 17:18:24 EST 2003 i686 athlon
i386 GNU/Linux
[midnite@localhost midnite]$

Terminal: navigating directories

- **`pwd`** : print working directory
- **`cd <dir>`** : change directory
- **`cd ..`** : go to the parent directory
- **`cd ~`** : go to the home directory
- **`cd /`** : go to root directory
  - The root directory on Linux is similar to the `C:\` directory on Windows.
  - Instead of **`C:\Documents\joe`**, it's **`/home/joe`**

Terminal: listing directories

- **`ls`** : list contents of current directory
- **`ls <dir>`** : list contents of another directory (don't type the `< >` characters!)
- **`ls -a`** : list directory contents, including hidden files (which start with `.`)
- **`ls -l`** : list directory contents with additional information
  - size, date, owner, permissions, etc.
- Can combine arguments, *e.g.* "**`ls -al`**"

Terminal: Examining files

- Refer to files by name, with some shortcuts
  - `*` character is wildcard; means "all files in this directory"
  - tab-completion of filenames
- `cat <filename>` : print file contents to screen
  - Best for short files (since it dumps the whole file)
- `more <filename>` : examine contents of file
  - Good for longer files
  - Press up and down to scroll (pgUp and pgDown also)
  - Press '`q`' to quit
  - Press '`/`' to search ('`n`' for next occurrence)
- `man <command>` : display a help file
  - Manual pages show up in `more`

Terminal: managing files

- **`cp <filename> <new name>`** : copy a file
- **`mv <filename> <new name>`** : moves a file
  - Also used for renaming
- **`mv <filename> <dir>`** : move a file to another directory
- Can also use **`[mv or cp] <file> <dir>`**
  - Moves or copies file into given folder
- **`rm <filename>`** : remove (delete) a file
  - Be careful!
  - BIG difference between "**`rm *.txt`**" and "**`rm * .txt`**"

Linux: Dealing with directories

- **`mkdir <dir>`** : make a directory
- **`rmdir <dir>`** : remove an empty directory
- **`rm -r <dir>`** : remove a directory and its contents
- **`mv`** : behaves the same way
- **`cp`** : one important difference
  - Use "**`cp -r`**" to copy directory contents
  - **`-r`** means "recursive"

Linux: More Useful Commands

- **`passwd`** : change password
- **`exit`** : close the terminal (also CTRL+d)
- **`emacs <filename>`** : edit a file
  - To save: CTRL+x, CTRL+s
  - To close: CTRL+x, CTRL+c
- Other text editors, too
  - **`vim`** : **`emacs`**'s (superior?) rival
  - **`gedit`**, **`nano`** : easier to use

CMS cluster sysadmins

- System adminstrators are:
  - Pat Cahalan
  - David Leblanc
- Their office is Annenberg 112
  - available 9-12, 1-5, M→F
- Email them: **cmshelp@cms.caltech.edu** or **help@cms.caltech.edu**
- Only they can help with forgotten passwords etc.
- For more info, visit the sysadmin web site: **sysadmin.cms.caltech.edu**

CMS cluster computers

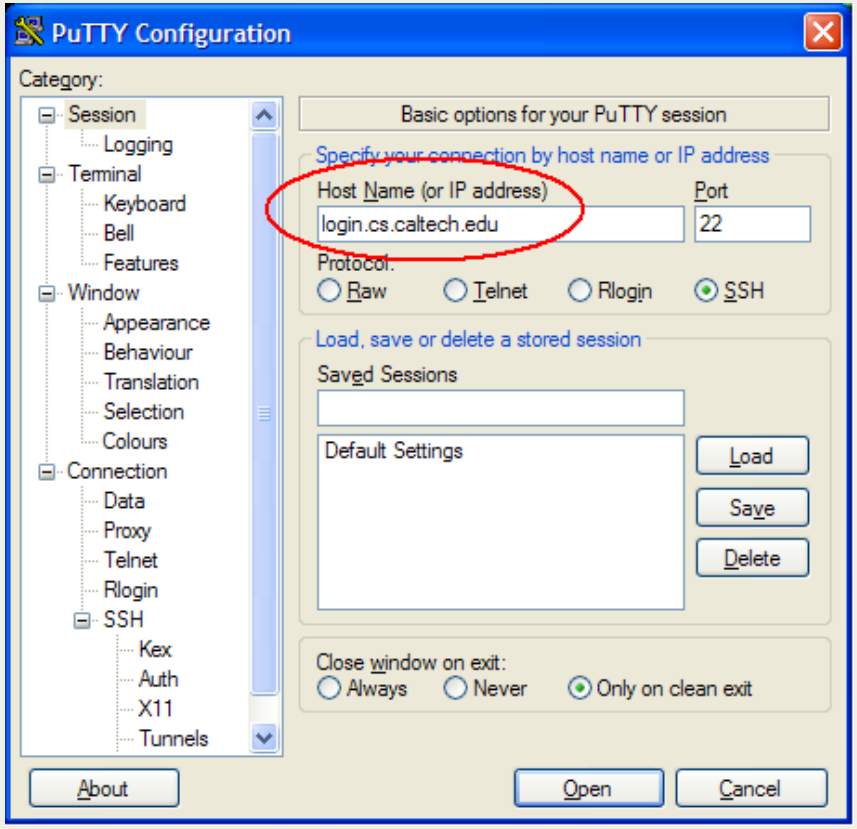
- One big rule for CMS cluster computers:
- DO NOT TURN THE MACHINES OFF!
- When logging out, the "shut down the machine" option exists but should be ignored
- Instead, just "log off"
  - then someone else can use it

Doing work remotely

- You are encouraged to work in the CS lab, but there are tools available for working remotely
- **`ssh`** : Log in to a machine remotely, as if you were sitting in front of that computer
  - Text-only terminal (no graphics!)
- **`scp`** : lets you copy files between your computer and a remote machine (uploads and downloads)
- Some free Windows tools for this
  - PuTTY – an SSH client
  - WinSCP – an SCP client
- **Linux and Mac:**
  - Can already use **`ssh`** and **`scp`** via the terminal

Doing work remotely: PuTTY

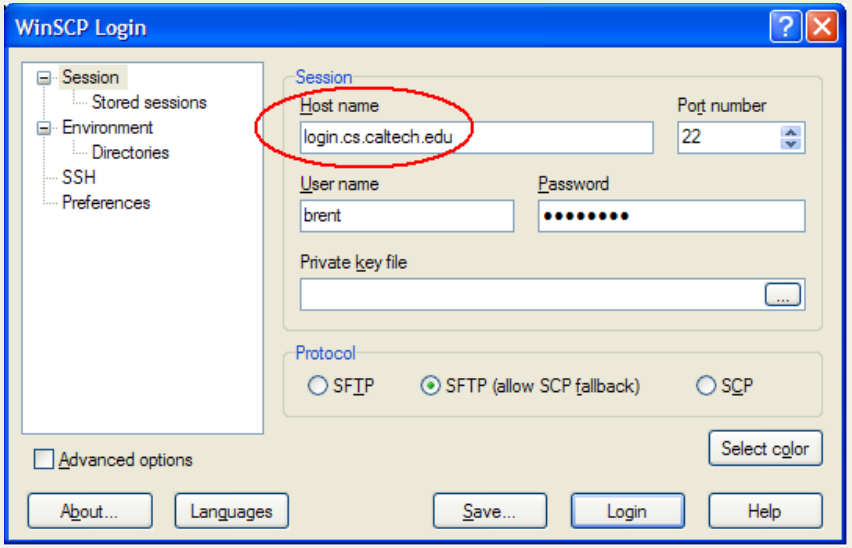
- **PuTTY**: a free SSH client for Windows
  - Host name: login.cms.caltech.edu
  - User your CS cluster username and password



  - To download: just google “putty” or “putty download”

Doing work remotely: WinSCP

- **WinSCP**: a free SCP client for Windows
  - Host name: login.cms.caltech.edu
  - Use your CS cluster username and password



  - To download: again, just Google it

Email forwarding

- Your CS cluster account comes with an email address of the form: username@cms.caltech.edu
- Can check mail at webmail.cms.caltech.edu

Email forwarding

- To set up mail forwarding:
  - set up a `.forward` file in your CS cluster home directory with your correct email address
- Example:

```
% cat > ~/.forward
joeblow@gmail.com   ← type this
[hit control-D to exit]
```

- That's it!

Python and WingIDE

- Mostly, you'll be working with Python and the WingIDE Integrated Development Environment
- Lab 1 will walk you through this, so we won't cover it here

csman

- csman is the CS 1 (CS 4, CS 11, ...) homework submission program
- If you have been assigned a CS cluster account, you can use that password to log in to csman
  - though the course csman page has to be set up first
  - NOTE: Donnie manages csman, not the sysadmins
- You submit your homework through csman
- csman will automatically email you once your TA grades your submission
- You can read your TA's comments on your labs
- You can check your current grades at any time

csman: on the web

- http://csman.cs.caltech.edu
  - View your status, grades, and TA's comments.
- Follow the link to the FAQ (frequently-asked questions) list
  - Kind of underpopulated now...

Questions?