CSE 374 Lecture 2

Computer model, bash commands, emacs

Notes

- Office Hours THIS WEEK
  - Today (Wed.) - 3-4pm with Simon
  - Thursday - 11-12am with Cynthia
  - Friday - 4-5pm with Andrew
- HW0 due Monday - see Canvas
- Communications:
  - Edstem board - great for general questions
  - cse374-staff@cs.washington.edu - for klaatu accounts and specific questions
- If you are still hoping to add the course - discuss with your academic adviser. You will be able to view recorded lectures upon joining.

Today

- Getting on to CentOS
- Computer structure (from the ground up)
- Shell commands
  - Special characters
  - Scripting
- Text Editors (emacs)

Getting Started with Linux

Use a virtual machine

Or

Log into Klaatu

https://courses.cs.washington.edu/courses/cse374/19sp/linux.html

When I log-in I get a shell

- A shell - a text based interface to the computer
- Specifically ‘bash’

Demo

Going to try another poll

If you don’t see the poll, don’t worry - nothing essential will be determined by poll. Its just to get some feedback and break up the lecture.

- *Have you been able to log onto a one of the CentOS systems?*

Linux and Shells

Text is efficient - typing is fast, there are no graphics to pass around, and logging is easy when recording text. Scripting makes it easy to automate textual interfaces.

Linux does have a GUI interface

Windows (and MacOS) do have shell interfaces

Most power users use both, depending on application.

Notes:

You could use any distribution of Linux that is up-to-date. Using CentOS through CSE ensures consistency.

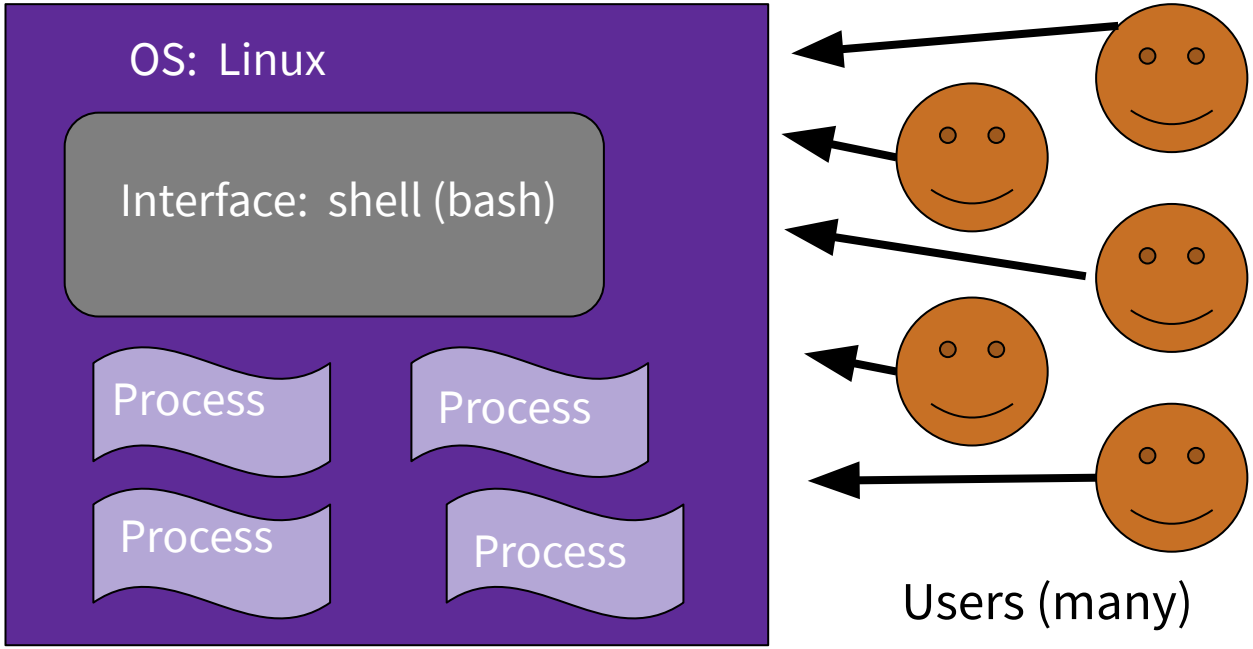
All Assignments will be graded as run on CSE software

Get Going!

Let’s try BREAKOUT ROOMS!

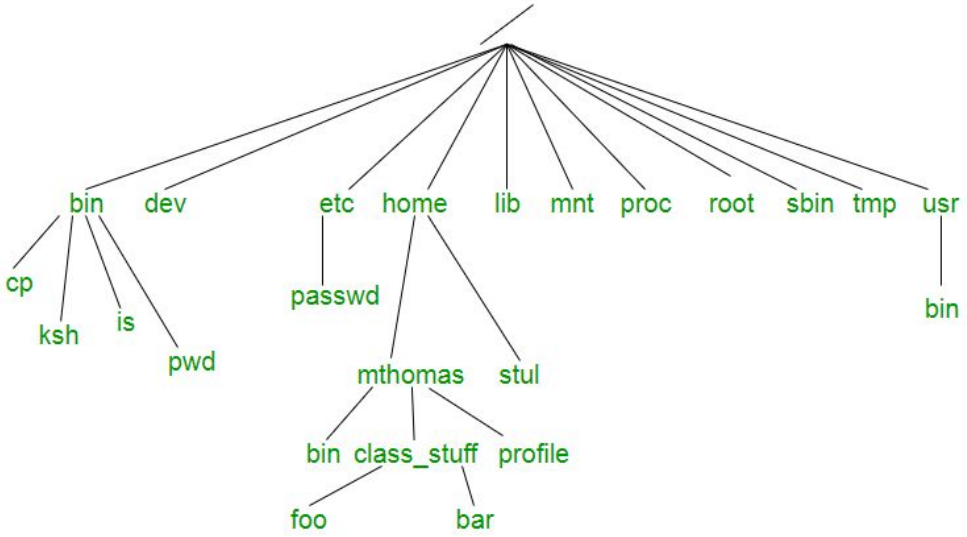
1. Log-in to your VM or klaatu
2. Try the commands demonstrated here

Computer Model



- One OS (CentOs) controls the computer.
- One filesystem stores data.
- Many processes are run. (A program runs one or many processes.)
- A shell is one process that allows for command line interface.
- Many users

File Systems



- File systems are trees
- (or directed acyclic graphs)
- A file (or directory) is specified by its path from the top (‘/’)
- Can be specified absolutely (entire path),
- Relatively (from current location)
  - This directory ‘./’
  - One directory up ‘../’
- You have access to your ‘home’ directory (‘~’)

Processes & the Shell

Shell essentially runs programs, or processes

Usually launch a process, and return to shell when done.

Each process has own memory stream and I/O

Stdin (keyboard), stdout (console), stderr

Many processes have options

‘&’ runs process in the background

‘fg’, ‘bg’, top, kill

Control where processes run

Execute a script with builtin ‘source’

Can redirect input and output (‘<’, ‘>’)

Getting Help

Most commands: ‘man ls’

Look for keyword: ‘man -k’

Also “--help”

Special characters

- Directory shortcuts
  - ~uname, ~
  - ./ or ../
- Wildcards (globbing)
  - 0 or more chars: *
  - Exactly one char: ?
  - Specified chars: [A-Z]
- History, or ‘!’

Alias

Defines a shortcut or ‘alias’ to a command.

(Essentially a really easy script)

Also, ‘alias’

.bashrc

Emacs (text editor)

C-x C-s #save

C-x C-c # quit

C-e # go to end of line

C-a # go to beginning of line

C-x C-f # find a file

C-g #exit menu

C-x C-k # kill a buffer

You can use any text editor you like. Emacs is amazingly powerful, and highly customizable with lisp scripts. It is probably worth learning.