Fill in the check-in form on cs107a.stanford.edu!
Announcements

- **CS 107A**
  - If you missed Tuesday, please review the syllabus
  - Office Hours
  - Notes on website
  - If you’re having trouble accessing Slack, let me know ASAP

- **CS 107**
  - Lab Preferences due Saturday (I suggest a Wed timeslot)
  - Get set up for assign0 ASAP (Step 0 of assign0)
Pulse Check

How are you generally feeling?
29 responses

- 48.3%
- 34.5%
- 13.8%

How do you generally feel about CS 107?
29 responses

- 48.3%
- 27.6%
- 10.3%

How caught up are you on lectures? (Please be honest, no one's judging)
29 responses

- 96.6%
- 3+ lectures behind
About our class (from just those who responded Tuesday)

Where do you live?
29 responses

- West Campus: 65.5%
- East Campus: 27.6%
- Row: 9.9%

What year are you?

- Sophomore (Class of 2024): 24.1%
- Junior (Class of 2023): 13.8%
- Freshman (Class of 2025): 62.1%
About our class (from just those who responded Tuesday)

What's your favorite fruit?

- Mango: 37.9%
- Strawberry: 6.9%
- Grapes: 3.4%
- Raspberries: 3.4%
- Peach: 6.9%
- Raspberry: 3.4%
- Pink Pineapple: 3.4%
- Passion Fruit: 3.4%
- Passion Fruit or Nectarine: 3.4%
- Blueberries: 3.4%
- Dragonfruit: 3.4%
- Banana: 3.4%
- Mango/Watermelon: 3.4%
- Pomegranate: 3.4%
- Persimmon: 3.4%
- Green Grapes: 3.4%
- Coconut: 3.4%
Agenda

- Myth Machines
- UNIX
- UNIX Commands
- UNIX Practice
- C Practice
Myth Machines
Servers

- Some computers are designed to be used remotely. They might not even have a screen!


http://www.mindscopetech.com/desktopserver
A Google datacenter with lots of servers
The Stanford Myth Machines (half of them)

Courtesy of Lisa Yan
Myth Machines

- myth51 - myth66
- Or “Myth clusters”
- Servers in the basement of Gates (room B08).
- They run a UNIX-like operating system called Linux
- No matter “which” Myth machine you use, you’ll see the same files
- All your CS 107 computing will be done here! Nice and consistent.
Remotely Connecting to Myth

ssh to server: adbenson typed ‘a’

ssh to terminal: adbenson typed ‘a’

ssh to server: <no input>

ssh to terminal: troccoli’s command finished, here’s the output

adbenson’s computer/terminal(s)

troccoli’s computer/terminal

https://www.amazon.com/Microsoft-Surface-Laptop-Touch-Screen-Alcantara/dp/B07YNK3R68
https://en.wikipedia.org/wiki/File:Term2-icon.png
Remotely Connecting to Myth

- [https://web.stanford.edu/class/cs107/getting-started.html](https://web.stanford.edu/class/cs107/getting-started.html)
- We use the “Secure Shell” (ssh) program to remotely connect
- The ssh program runs within a terminal program on your computer
- `ssh <SUNET>@myth.stanford.edu`
- Tip: You can open multiple terminal windows, and use ssh within each of them! Try doing assignments with two ssh sessions side-by-side.
- Tip (?): Make your friends think you’re an elite hacker by writing all your essays in emacs in a terminal instead of Microsoft Word
UNIX
What's the big deal about UNIX?

- UNIX: an operating system (OS) from the 70s made by the people who made C. Pretty much no one uses it now, just its successors.
- UNIX-like OS: an OS that shares similarities with UNIX, perhaps in design or how programs for it are made or the commonly bundled programs it has.
- Linux: a UNIX-like OS created by a Finnish guy that got really popular. Used in most servers, Android smartphones, lots of other stuff.
- macOS: a UNIX-like OS created by Apple for laptops/desktops.
- Windows: a NOT UNIX-like OS created by Microsoft that is extremely different from these other OSes in many internal ways.
What’s the big deal about UNIX?

- Back then, everyone used the command line. It’s simpler to create programs for which is why we’re teaching you it.

Also, it’s more efficient to use with practice, and it’s still relevant today for certain types of work.
Myth Filesystem

- Just like your computer, the Myth machines have a filesystem

```bash
$ adbenson@myth61 ~$ ls -a
.  .git  tools  .gitignore  readme.txt  triangle
..  .metadata  custom_tests  Makefile  samples  triangle.c

$ adbenson@myth61 ~$ cd ..
```

```bash
$ adbenson@myth61 ~$ cd ..
```

```bash
$ adbenson@myth61 ~$ cd ..
```
UNIX Commands
UNIX Practice on the course website

- We're going to do some practice in a little bit, so you should `ssh` into myth and clone the starter code

- AFTER SSHing:
  ```
git clone /afs/ir/class/archive/cs/cs107a/cs107a.1226/WWW/exercises/unix
  ```
I care about you knowing these well

ls  cd  man
mv  cp  rm

cat  grep  emacs
I care about you knowing these well

```
list  cd  man
mv    cp  rm
cat   grep emacs
```
I care about you knowing these well

list
change
man
directory
mv
cp
rm
cat
grep
emacs
I care about you knowing these well

**list**  **change**  **manual**

**mv**  **cp**  **rm**

**cat**  **grep**  **emacs**

**directory**
I care about you knowing these well

list  change  manual

directory

move  cp  rm

cat  grep  emacs
I care about you knowing these well

list  change  manual

directory

copy  rm

cat  grep  emacs
I care about you knowing these well

list change manual

directory

move copy remove

cat grep emacs
I care about you knowing these well

- list
- change directory
- manual
- move
- copy
- remove
- concatenate
- grep
- emacs
I care about you knowing these well

- list
- change directory
- manual
- move
- copy
- remove
- concatenate
- global regular expression
- emacs
- print
I care about you knowing these well

- list
- change
- directory
- manual
- move
- copy
- remove
- concatenate
- global regular
- expression
- editor
- print
- macros
UNIX Tips

- Command line pros are lazy and type as little as possible
  - Cycle through previous commands with UP and DOWN (or CTRL+P and CTRL+N)
  - Tab-complete everything! This works for a lot of things (just try it) but most notably filenames and program names
- Use multiple terminals – try using one for emacs and one to make and run your program
- Clear your terminal with CTRL+L (you can still scroll up to see it)
- On your laptop, make a file called config inside ~/.ssh and put this in it:

  ```
  Host myth
  Hostname myth.stanford.edu
  User adbenson
  ```

- Then you can do `ssh myth` instead of `ssh adbenson@myth.stanford.edu`! Saves typing in the long run.
UNIX Practice (on the course website)
C Practice
argc, argv

Signature of the main function:
int main(int argc, char *argv[]) {
    ...
}

If you run the program like this:
./myprogram 3 "hello" foo -s 8

Then argc will be 6 and argv will be this string array:
["./myprogram", "3", "hello", "foo", "-s", "8"]
Printf allows you to use “format strings” containing “format specifiers”. https://web.stanford.edu/class/cs107a/notes/printf

```c
printf("This is CS%dA\n", 107);

char *name = "Andrew";
printf("My name is %s\n", name);
```