CS 241: Systems Programming

Lecture 1. Introduction

Fall 2019

Prof. Stephen Checkoway

What is this course about?

Tools for succeeding in computer science

- Unix command line
- Bash scripting
- C programming
- Building software
- Debugging
- Linters/static analyzers
- Version control
- Collaborative development
- Regular expressions
- Looking things up like a real programmer
- …

What is this course not about?

Learning to program (you already know how to do that!)

You should expect to

Do a lot of programming

Learn about tools by reading their documentation and Googling

Read a lot

Work on projects in groups

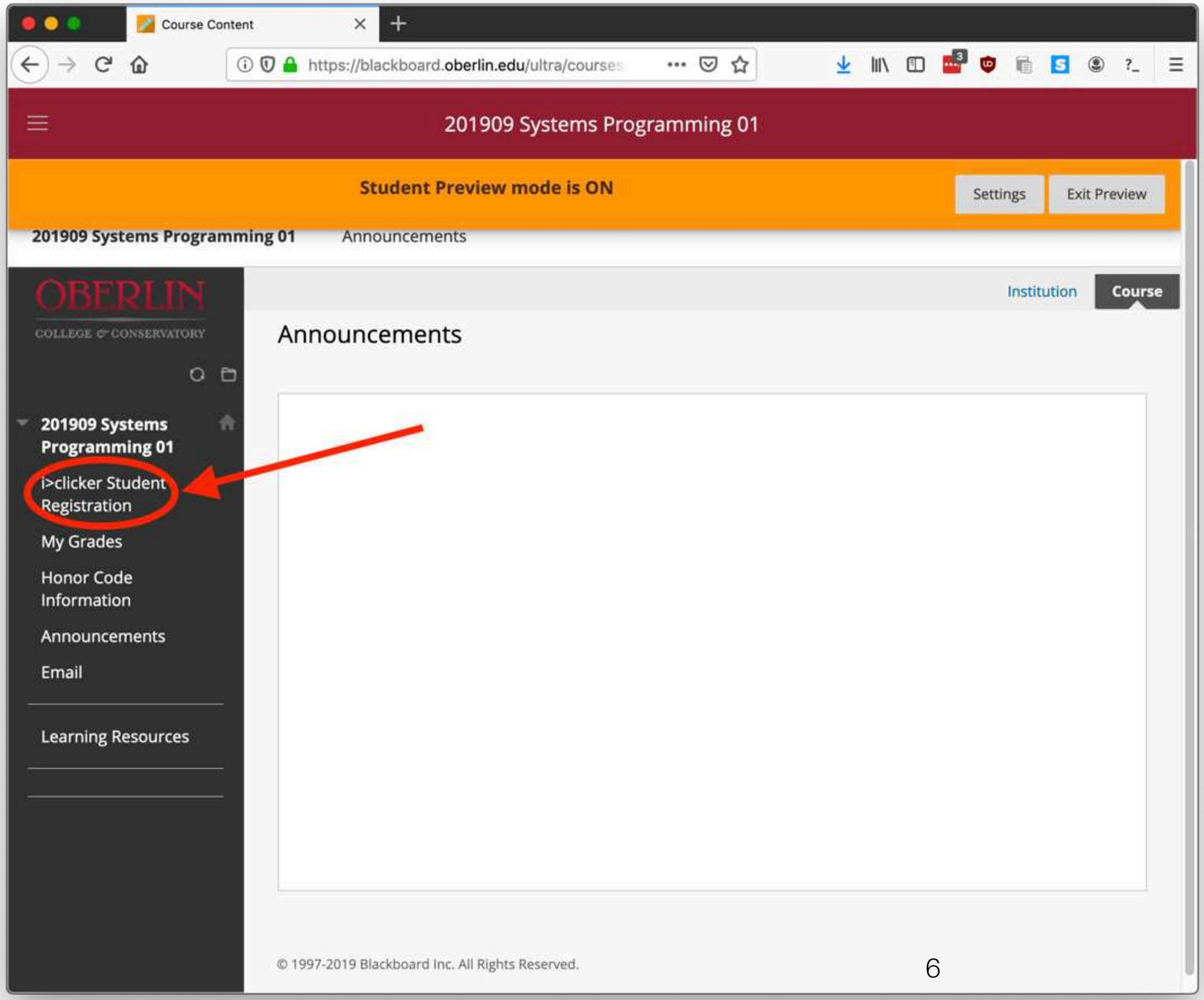
iClickers

Need to have one and register it by Friday's class

Do not borrow them from the Science Library!

http://citadel.sjfc.edu/students/emm00561/e-port/msti260/iclicker.jpg

Register your clicker



Lecture format

Before class

- Reading quiz on Blackboard

Lectures will include

- Lecturing on the topic with some peer instruction (clickers)
- Hands on experience with the day's concepts

Bring a laptop to class or sit next to a classmate who has one

- The science library loans laptops for 4 hours at a time (limited supply)
- There's a loaner program for low-income students (talk to me privately)

Bring your iClicker

Peer instruction

I will pose a multiple-choice question about a concept

Think and choose your answer individually with your clicker

After the time ends, discuss your answers with the people around you (assigned groups of 3 later), come to consensus, and vote again

After the group vote, you explain why your group voted that way

Why peer instruction?

You get to make sure you're following the material

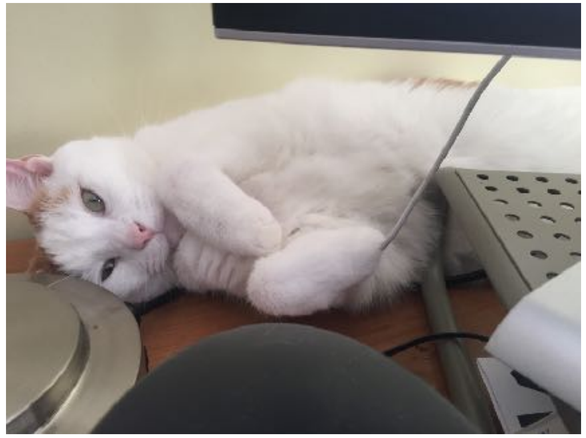
I get immediate feedback about what parts are confusing

It's less boring than lecture

Research shows it promotes more learning than standard lecture

Which cat is cutest?

A. Kirk



B. Spock

C. Bones

D. Equally cute

E. I don't like cats (I'm a monster)

Course website

https://checkoway.net/teaching/cs241/2019-fall/

- Syllabus (there's (a fair bit of) reading for Friday!)
- Links to books
- Homeworks
- Resources
- Piazza
- Policies
- Office hours

Office hours

Thursday 11–12

Friday 13:30–14:30

By appointment

Grading

10% Class participation

10% Reading quizzes (due before class)

55% Homework (8 in total)

25% Final group project

The final project must be completed to pass the course

Late days/missing class

You have 3 late days you can use on any homework

- If you work with a partner (and you should), late work counts against both of your remaining late days

You can choose not to participate in class (including missing class) three times without penalty

You get participation points each day by answering clicker questions, so make sure you answer them all

Final group project

Work in groups of 4 (I'll pick the groups, but you'll get input)

More about this in a few weeks.

You will write a project proposal

You will have a bunch of time to work on it

You will give a short presentation on it at the end of the semester

Labs

King 135 and 201

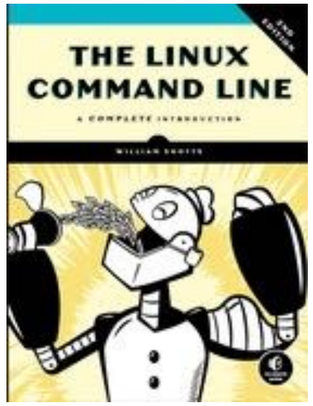
Door code: 3684

See Chris Mohler in OCTET if you don’t have an account

See Jackie Fortino in the CS office if you add late for 24 hour access

Textbooks

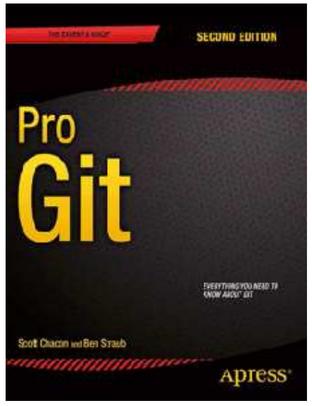
William E. Shotts. *The Linux Command Line*, 2nd edition



J. Maassen. *C for Java Programmers*

Jens Gustedt. *Modern C*

Scott Chacon and Ben Straub. *Pro Git*, 2nd edition



Honor code

Do

- Work in groups of size 2 (or 4 for the project)
- Discuss assignments with others in the class, including on Piazza
- Cite sources if using code/ideas from outside class

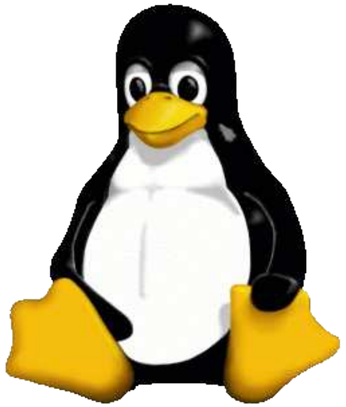
Do not

- Share your solutions outside your group
- Use someone else's solutions

Connecting to clyde

Server for CS 241: clyde.cs.oberlin.edu

- Access via ssh
- Accessible from on campus (and in town), but not outside Oberlin



Windows

From a terminal:

```
$ ssh user@clyde.cs.oberlin.edu
```

Use PuTTY https://putty.org/

Can't connect to clyde?

clyde.cs.oberlin.edu isn't reachable outside of Oberlin

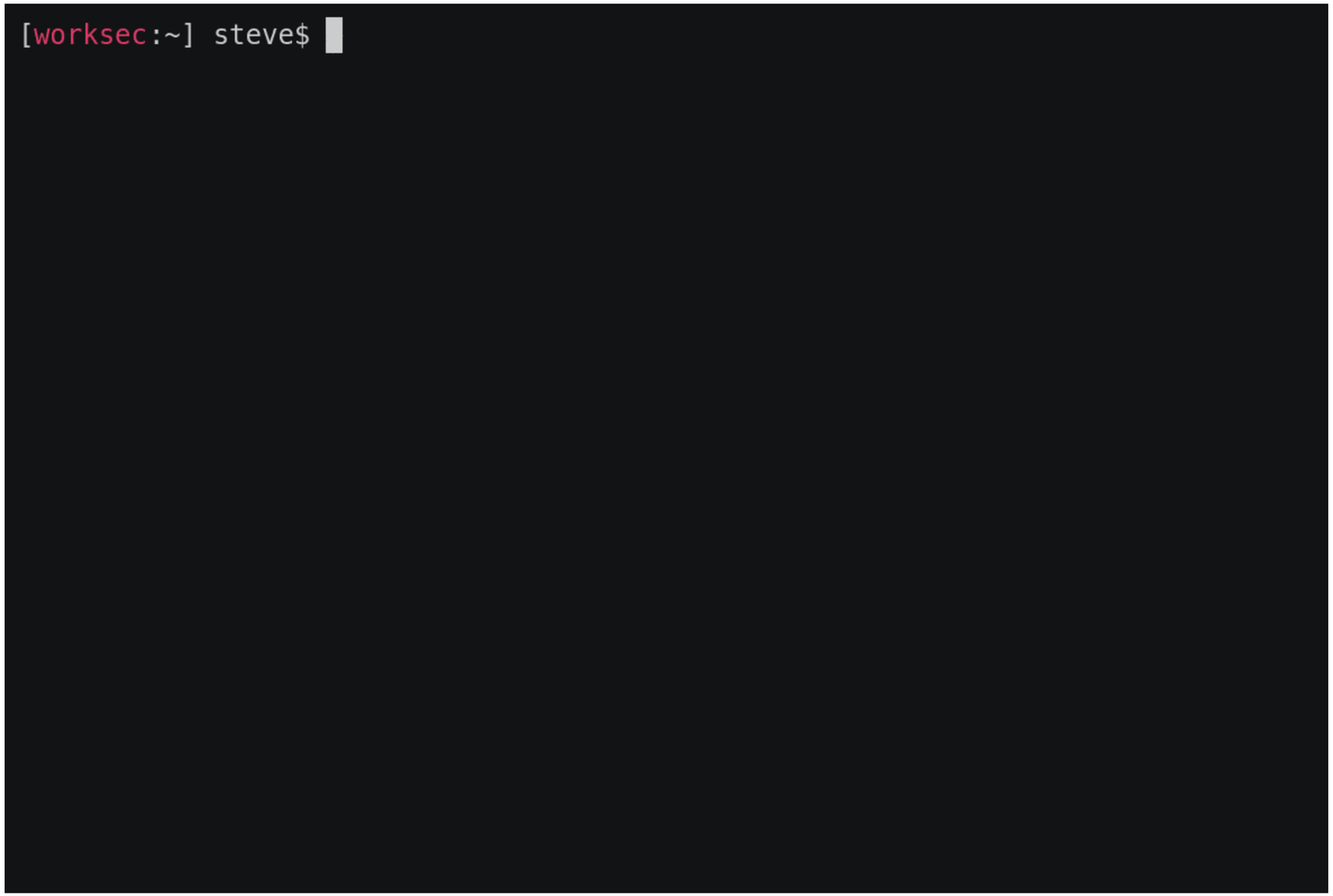
occs.cs.oberlin.edu is!

```
$ ssh user@occs.cs.oberlin.edu
$ ssh clyde.cs.oberlin.edu
```

Alternatively

```
$ ssh -J user@occs.cs.oberlin.edu user@clyde.cs.oberlin.edu
```

Connecting to clyde via occs



Editing files

Use any Unix command line text editor

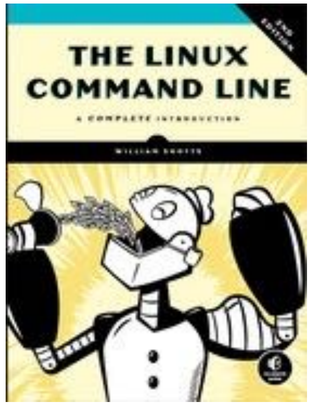
- `vim/nvim` (run `vimtutor` first for a tutorial, highly recommended! Also read chapter 12 of *The Linux Command Line*)
- `emacs` (start `emacs` and type `CTRL-h t`)
- `nano` (look at the bottom of the terminal)

Use a graphical editor

- `$ ssh -X clyde.cs.oberlin.edu`
- Run atom, `gedit`, `komodo-edit`, `eclipse`, etc.

Get comfortable using a command line editor (I recommend `nvim`)

For next class



Register you iClicker on Blackboard

Read chapters 1–5 of *The Linux Command Line*

There is a reading quiz on Blackboard, be sure to do it before class

Bring your iClicker and a laptop to class