Welcome!

COMS W4118
Operating Systems I
Spring 2017
Teaching staff

- 7 Teaching Assistants (TAs)
  - Mitchell Gouzenko mag2272@columbia.edu (*)
  - Kevin Chen kxc2103@columbia.edu (*)
  - John Hui jzh2106@columbia.edu
  - Andy Lianghua Xu lx2180@columbia.edu
  - Benjamin Hanser bwh2124@columbia.edu
  - Emily Meng ewm2136@columbia.edu
  - Raphael Norwitz rsn2117@columbia.edu

(*) Mitchell and Kevin are co-head Tas

- TA email & office hours
  - Email to cucs4118-tas@googlegroups.com goes to all teaching staff
  - TA room – 1st floor, Mudd building
  - TA calendar: http://bit.ly/4118-cal (will be filled by this weekend)

- Instructor email & office hours
  - Jae Woo Lee jae@cs.columbia.edu – 715 CEPSR
Who am I?

• Jae Woo Lee
  – Senior Lecturer in Computer Science
    • Teaching first, research second
  – Just call me Jae (pronounced ‘Jay’)
    • Note that this is NOT a general rule – address instructors as Professors unless told otherwise

• My background
  – Undergrad in Columbia College
  – Many years of professional experience
    • Designing and coding large-scale software systems
    • Running a start-up company
  – Came back to Columbia for Ph.D.

• I’m not an OS researcher
  – Interested in possibly joining OS research group?
  – Then take OS with Prof. Jason Nieh or Prof. Junfeng Yang
Prerequisites

1. **C**
   - Don’t even think about it if you don’t know C cold

2. **UNIX**
   - Must be comfortable at command line
   - Don’t take the course if you never worked on UNIX

3. **Computer architecture**
   - Basic hardware knowledge: register, cache, bus, etc.
   - Should be able to read simple assembly code: load, store, add, jmp, etc.

4. **Data structures**
   - Nothing fancy, but must be solid on the basics: list, tree, stack & queue

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Columbia courses:
For 1 & 2:
   W3157
   Advanced Programming
For 3:
   W3827
   Fundamentals of Computer Systems
For 4:
   W3134, W3136, or W3137
   Data Structures
Topics

• General OS theory
  – Throughout the whole semester

• Advanced UNIX programming
  – First 1/3 of the semester
  – UNIX from outside: process, thread, networking, concurrency, signals, non-blocking & async I/O

• Linux kernel implementation
  – Later 2/3 of the semester
  – UNIX from inside
Textbooks

1. **Operating System Concepts Essentials**
   - You can use "Operating System Concepts, 9th Ed” instead – OSCE2 is basically a cheaper version of OSC9

2. **Linux Kernel Development**

3. **Advanced Programming in the UNIX Environment**

Get them wherever you usually get your textbooks from...
Class mailing list

• 4118 ListServ
  – Communication between all of us, including official announcements
  – Do:
    • Ask & answer questions – 1st place to go for non-personal questions
    • Provide helpful tips & links for your classmates
    • Be considerate & friendly
  – Don’t:
    • Ask questions without first trying to solve it on your own
    • Post code or critical info that leads directly to solution
    • Be impatient & rude

• TAs and I respond to emails in this order:
  – ListServ, cucs4118-tas@googlegroups.com, then individual emails
  – NEVER send a same question separately to multiple people
    • You will get banned from ever sending emails if you get caught doing this.

• Learn to manage high volume
  – [ANN] in email subject for announcements – set up Gmail filter
  – Yes, I know about Piazza. Thanks for your suggestion.
Homework

• 8 assignments (subject to change)
  – Some are individual, some are group assignments
  – Some are short & light, some are long & heavy
  – Assignments carry different weights

• Random grading
  – Some assignments may not be graded
  – But you won’t know until after the deadline
  – HWs picked for grading will be 33% of your grade

• Late policy
  – 20% penalty after deadline up to 24 hours; zero afterwards
15 million lines of code

• “As of 2013, the Linux 3.10 release had 15,803,499 lines of code”
  – Learn to navigate a large code base
  – Learn to read code rather than documentations that are often vague, out-of-date, or flat-out wrong

• You will probably encounter a large existing code base wherever you get a job
Exam

• Exam schedule
  – Two in-class exams during the semester – dates TBA
  – No final exam

• Your overall grade
  – HW, Exam #1, Exam #2 – 33% each
  – I reserve the right to boost one’s score by up to 5%
    • For class & listserv participation, exceptional work, etc.
    • Usually < 0.5% in order to bump up some borderline letter grades
Zero tolerance on cheating

• **REQUIRED READING:**
  http://www.cs.columbia.edu/~jae/honesty.html

• You are cheating if you:
  – Take code from friends, or search for code on the Internet
  – Look at solutions that your friend has from previous semester
  – Upload any class materials (including your own code) to public repository (ex. GitHub) during or after this semester

• We can tell
  – We compare you submissions to CURRENT AND PREVIOUS submissions
  – You submit work history – minimum 5 commits required
  – Once you look at cheat code, you won’t be able to come up with anything else

• Result of cheating
  – Case 1: You get caught
    • Academic penalty – 1 letter grade down for mild cases; F for severe ones
    • Referral to the Office of Judicial Affairs
    • Spring 2016: 50+ cases of suspected cheating; 36 convicted cases
  – Case 2: You get away with it
    • You will keep cheating for the rest of your life – have a nice life.
Six assignments on Day 1!

1. Subscribe to 4118 ListServ today
   • In the textbox “Your name (optional)” put Your Full Name (UNI)
     – For example: Jae Woo Lee (jwl3)
   • You must reply to the confirm email (which might be in your spam folder)
   • Then receive “Welcome to the "Cs4118" mailing list”
     – This email contains your password for accessing archives of past postings

2. Read the following two documents:

3. HW0 (50 points) – due Thu, 1/19, 11:59pm
4. HW1 (100 points) – due Tue, 1/24, 11:59pm
5. Reading assignments
   • See [http://www.cs.columbia.edu/~jae/4118/](http://www.cs.columbia.edu/~jae/4118/) for HW0, HW1, and reading assignments
6. Start forming groups of 3 – feel free to advertise on listserv