Welcome!

COMS W4118
Operating Systems I
Spring 2016
Teaching staff

• 7 Teaching Assistants (TAs)
  – Chaiwen Chou cc3636@columbia.edu - Head TA
  – Emilia Pakulski enp2111@columbia.edu
  – Derek Xingzhou He xh2187@columbia.edu
  – Rohit Gurunath rg2997@columbia.edu
  – Akira Baruah akb2158@columbia.edu
  – Mitchell Gouzenko mag2272@columbia.edu
  – Amar Singh Dhingra asd2157@columbia.edu

• 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
  – Jae’s calendar: http://bit.ly/jae-cal (will be filled by Friday)
  – First week only: Wednesday, 3:30-5:30pm, or grab me after my classes
Who am I?

• Jae Woo Lee
  – 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.
Class is full.

As of last night:
- 150 max
- 151 enrolled
- 79 more in the wait list

Wait list is first come, first served
- Please don’t come to me with add/drop form
- Exceptions require email from faculty

Today’s lecture (same title for 3 years... 😞):
10 Reasons Why You Should Drop This Class
Reason 1: It's Not You, It's Me...

• I’m not an OS researcher
  – In fact I don’t do much research at all these days
  – Interested in possibly joining OS research group?
  – Then take it with Prof. Jason Nieh or Prof. Junfeng Yang

• This is only my 3rd time teaching OS
  – Curriculum still in flux
  – Some lectures and homeworks will be made as we go

• In my defense, I’ve been told I’m a pretty good teacher
Reason 2: Actually It’s You

Come back when you have the prereqs:

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 simply assembly code: load, store, add, jmp, etc.

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

Columbia courses:
For 1 & 2:
- W3157
  Advanced Programming
For 3:
- W3827
  Fundamentals of Computer Systems
For 4:
- W3134, W3136, or W3137
  Data Structures
Reason 3: The (OMG) Workload

This course has been two courses in one:

(1) OS theory typically taught in basic OS course
(2) Kernel hacking typically taught in advanced OS

Some complain it’s like a 6-credit course!

BTW I’m adding one more:

(3) Advanced UNIX programming

• UNIX from the user level: process, thread, networking, concurrency, signals, non-blocking & async I/O, etc.
• Much needed backdrop before delving into UNIX kernel
• Also some system administration – become a Linux power user!
• First 1/3 of the semester
Reason 4: Too Many 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**

Available now at Book Culture – 112 st, between Broadway & Amsterdam: [http://www.bookculture.com](http://www.bookculture.com)

Some of them might be on Safari books online: [http://www.columbia.edu/cu/lweb/eresources/databases/4136562.html](http://www.columbia.edu/cu/lweb/eresources/databases/4136562.html)
Reason 5: Too Many Emails

• 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.
Reason 6: Too Much Homework

• Uncertain at this point, but 5 - 10 assignments
  – 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
Reason 7: 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
Reason 8: Hard Exams

• People tell me I give hard exams...
  – Exams are closed-everything, no electronic device of any kind
  – Based on lectures and assignments
• 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
Reason 9: Zero tolerance on cheating

• **REQUIRED READING:**

• 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 know about the Internet too
  – You submit work history – **minimum 5 commits required**

• 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
    • 38 people got caught in Fall 2015
  – **Case 2:** You get away with it
    • You will keep cheating for the rest of your life – have a nice life.
Reason 10: 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, 1/21, 11:59pm
4. HW1 (100 points) – due Tue, 1/26, 11:59pm – will be posted by tonight
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