Welcome to

C++ Deep Dive for C Programmers

(aka c2cpp, c2cxx, or just c2)

Spring 2026

COMS 4995-005

https://c2cxx.github.io/www/2026-1/

Teaching staff

- TAs:
  - Julien Remy jr4404@columbia.edu
  - Shriya Reddy Mahakala srm2245@columbia.edu
  - Adrian Lee acl2238@columbia.edu
  - Rhys Lester Talley rt2860@columbia.edu

- Email to all teaching staff:
  - ta-c2cpp@googlegroups.com

- Office hours on the course homepage

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
- Contact: jae@cs.columbia.edu / 715 CEPSR

Background
- Undergrad in Columbia College
- Many years of professional experience
  - Designing and coding large-scale software systems
  - Running a startup company
- Came back to Columbia for Ph.D.
- More info at http://www.cs.columbia.edu/~jae/

Prerequisites

- MUST know C well
  - COMS 3157 (AP) or equivalent is required
- SHOULD know command line env, make, git
  - Catch up asap if you are rusty

Lectures and Auditing

In-person lectures on **Mon & Wed 5:40-6:55pm**

- Recordings will be available on CW shortly afterwards

- Optional review sessions by TAs may be held – details TBA

Auditors are welcome to lectures & listserv

- But no Linux account, no lab/exam submissions, no TA access

Exams

- Two synchronous and in-person exams:
  - Exam 1: Wednesday **March 11**
  - Exam 2: Wednesday **April 22**
  - No final exam
- **There are no make-up or alternate exams**
  - If you cannot make any of those exams, please take the course next time
- Extended-time exams at ODS/CARDS must overlap with class exam time by at least an hour
  - You may not be able to have a class before/after
- CVN students: see remote proctoring procedure at the end

Assignments (aka labs)

- 5 individual assignments
- Deadline
  - Soft deadline, and then hard deadline 2 days later
    - You use 1 late day if you submit within 24 hours after the soft deadline
    - You use 2 late days if you submit between 24 and 48 hours
    - After 48 hours past the soft deadline, no submission will be accepted
  - You have 5 late days total; up to 2 can be used for a single lab
    - Late days are for unforeseen circumstances such as sickness
    - Please do not ask for additional extensions
  - Absolutely no exception under any circumstances
- All policies are subject to change

Grading

- Labs (32%), E1 (32%), E2 (32%), Attendance (4%)
  - Attendance logistics TBA, but will allow at least 25% absence
  - Letter grades are curved
  - No predetermined cutoffs
  - Expect mean/median to be around B/B+
  - Grading policy may change later

Please don't cheat

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

You are cheating if you:
- Take code from other people, the Internet, or AI
- Look at solutions that your friend has from previous semester
- Upload any class materials (including your own code) to publicly viewable repositories during or after this semester

AI policy in AP (as a reference)

- Think of AI as a private tutor who:
  - Knows everything (he certainly thinks he does)
  - Never stops you from crossing the line to cheating
  - *Hiring tutor isn't cheating but almost always leads to that*
- AI will take away from you:
  - Cognitive struggle
  - Productive failure
  - *Exactly the experiences where real learning takes place in AP*
- Bottom line:
  - Yes, you should learn to use AI well, but not in AP
  - Not using AI will make AP difficult – exactly what you want
  - AI will replace many humans – you want to be one of them?

Your learning continues in c2cpp, but you have more agency

Mailing lists

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Whole class:     c2cpp@lists.cs.columbia.edu
Teaching staff: ta-c2cpp@googlegroups.com
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- Subject tags in brackets:
  - [c2cpp] – prepended automatically to all class listserv emails
  - [ANN] – important announcements by teaching staff
  - [LAB2], [EXAM1], etc.

- Learn to manage high volume – setup Gmail filters

- At the very least, do not miss any [ANN]s

Mailing list etiquette

Do:
- Ask & answer non-personal questions on class listserv

- Provide helpful tips & links for classmates

- Be considerate & friendly

Don't:
- Ask questions without first trying to solve it yourself

- Post code or critical info that leads directly to solution

- Be impatient & rude

Prefer using class listserv over TA listserv

- We may redirect general questions to listserv with ID redacted

Recommended Textbook & References

- **A Tour of C++, 3rd Ed.**
  - By Bjarne Stroustrup, the creator of C++
- Online references
  - C++ Super-FAQ: https://isocpp.org/faq
  - C++ reference: https://en.cppreference.com/w/
- "The Definitive C++ Book Guide and List"
  - https://stackoverflow.com/questions/388242/the-definitive-c-book-guide-and-list

Topics covered

- C, plus plus
  - Constructor, destructor, copy, move
  - References, operator overloading
  - Odds & ends like namespaces, exceptions
- Object-Oriented Programming in C++
  - Polymorphism
  - Multiple & virtual inheritance
  - I/O stream hierarchy
- Generic Programming in C++
  - STL containers, iterators, algorithms
  - Function objects and lambda
  - Template metaprogramming & concepts
- RAII paradigm
  - Smart pointers
- Concurrency

HW0: 50 points total

- **Part A (20 points): due Wed 1/21, 11:59pm (TONIGHT!)**

  Subscribe to c2cpp ListServ today
  - <https://lists.cs.columbia.edu/mailman/listinfo/c2cpp>
  - In the textbox "Your name (optional)" put Your Full Name (UNI)
    – For example: Jae Woo Lee (jwl3)
  - **You must reply to the confirm email (might be in your spam folder)**
  - Then receive "Welcome to the "c2cpp" mailing list"
    – This email contains your password for accessing archives of past postings
  - All emails to listserv, TAs, or me MUST include your UNI
    – Sign it with UNI if you don't use <UNI@columbia.edu>
    – Or just use <UNI@Columbia.edu> instead of first.last or whatever... (please)

HW0 continued

- **Part B (30 points): due Friday 1/23, 11:59pm**
  1. Read the following two documents:
     - http://www.cs.columbia.edu/education/honesty
     - http://www.cs.columbia.edu/~jae/honesty.html
  2. Send me an email containing:
     - To: jae@cs.columbia.edu
     - Subject: "[c2cpp] hw0-UNI"
       – Without quotes, sole space before hw0, UNI replaced with your actual UNI in lowercase
     - Your name, major & school program, year
       – Ex) Jae Woo Lee, Physics, Columbia College, class of 1994
     - Your pledge – see honesty.html above
     - CS classes taken and/or other programming background
     - Optionally anything else you want to let me know
     - Optionally attach a picture of you, but please reduce image size to about 100KB