

Welcome to c2cpp!

C++ for C Programmers
(aka c2cpp, c2cxx, or just c2)

Spring 2025

COMS 4995-009

<https://c2cxx.github.io/www/2025-1/>

Teaching staff

- TAs:
 - Brennan Xavier McManus bm2530@columbia.edu
 - Teng Jiang tj2488@columbia.edu
 - Albert Jan aj3051@columbia.edu
 - Shreya Somayajula svs2137@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

- COMS 3157 or equivalent is required
 - MUST know C well
 - MUST be comfortable in UNIX command line
 - SHOULD know make & git
 - If not, you need to learn them this week

Lectures and Auditing

In-person lectures: **MW 5:40-6:55pm, 833 Mudd**

- 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 5**
 - Exam 2: Wednesday **April 23**
 - 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)

- 4-6 labs (TBD)
 - May skip grading some labs (after the deadline passes)
- 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 (1/3) + Exam1 (1/3) + Exam2 (1/3)
 - Letter grades are curved
 - No predetermined cutoffs
 - Expect mean/median to be around B/B+
 - Grading policy may change later

Zero tolerance on cheating

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 your friend has from previous semester
- Upload any class materials (including your own code) to public repository (ex. GitHub) during or after this semester

Don't become a human being that AI can replace!

Mailing lists

Whole class: c2cpp@lists.cs.columbia.edu

Teaching staff: ta-c2cpp@googlegroups.com

- 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

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>

Core 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++
 - Containers, iterators, algorithms
 - Function objects and lambda
- RAII paradigm
 - Smart pointers

Additional topics as time permits

- Advanced templates
 - Type deduction
 - Variadic templates
 - Metaprogramming
 - Concepts
- Concurrency
- Design patterns in C++

HW0: 50 points total

- **Part A (20 points): due Wed 1/22, 11:59pm (tonight)**
 1. 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)
 2. Get the textbook
 - Start reading ATC chapters 1,2,3

HW0 continued

- **Part B (30 points): due Friday 1/24, 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

For CVN students only

- Remote exam proctoring procedure
 - We send exam PDF a few min before exam
 - You go print exam and come back within a few min
 - You are in a zoom session with video, microphone, and speaker ON
 - Your zoom camera is placed at a distance so we can watch your entire surroundings
 - **You must have access to a printer**
- Send me remote proctoring request
 - Email subject: [c2cpp] UNI: Request for Remote Exams
 - Confirm that the procedure above will work for you
 - **Deadline for request: Friday 1/24**