

COMS 3157: Advanced Programming

Course Overview

John Hui

Columbia University in the City of New York
Department of Computer Science

Fall 2022

Teaching Staff

Teaching Staff

22 Teaching Assistants, all former AP students:

Tameem Asif

Ivy Basseches*

Jeremy Carin

Leslie Chang

Andy Cheng

Max Dickman

Kyle Edwards

Marcus Fong

Joy He*

Chloe Ho

Phillip Le

Claire Liu

Phoebe Lu

Sagarika Sharma

Anjali Smith

Nandini Talwar

Jake Torres

Patrick Tong

Imanol Uribe
Echevarria

Maylis Whetsel*

Noam Zaid

Tal Zussman*

*Head TA

About Me

John Hui (please just call me “John”)

PhD candidate in Computer Science

Research interests: programming languages, compilers,
real-time systems

Undergraduate in Columbia College, CC'18

Took 3157 in Fall 2015

Administrivia

Course Webpage

<https://cs3157.github.io/www/2022-9/>

You will find:

- Lecture/recitation schedule and notes
- Office hours calendar
- Exam dates and assignment deadlines
- Other course material

Communications

Mailing lists (“listservs”)

[cs3157] (whole class): cs3157@lists.cs.columbia.edu

[CS3157-TA] (teaching staff): cucs3157-tas@googlegroups.com

Look for subject tags (in brackets), e.g., [ANN]

Examples:

- [cs3157][ANN][LAB7] Correction to lab7 instructions
- [cs3157][LAB6] In case you're curious about fdopen()

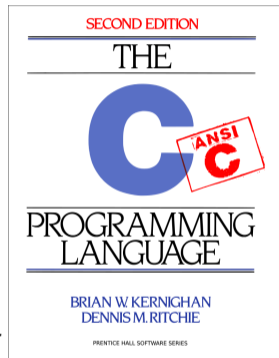
Textbooks

Required:

The C Programming Language (2nd edition)
by Brian Kernighan and Dennis Ritchie
also known as “K&R”

Recommended:

Advanced Programming in the UNIX Environment
by W. Richard Stevens and Stephen A. Rago



Lectures and Recitations

Meeting times

Lectures: Tues and Thurs 4:10pm–5:25pm, in IAB 417

Recitations: Fri, Sun, and Mon (details on course webpage)

Attendance recommended but not mandatory

Recitations mirrored across all sessions each weekend

All meetings in-person; lectures recorded to Courseworks

Exams

Dates

Midterm 1 (in-class): Thurs October 6, 4:10pm–5:25pm

Midterm 2 (in-class): Thurs November 17, 4:10pm–5:25pm

Final (exam week): Tues December 20, 4:10pm–7:00pm

Exams are synchronous, in-person, and mandatory

No alternatives, no make-up exams

If you cannot take these exams, take 3157 another semester

Assignments (“Labs”)

7–8 labs, completed and graded on our class server (CLAC)

Labs are not weighted the same; lowest lab score is dropped (converted to 0)

8 late days total; up to 2 can be used for each lab

Combined lab score formula

$$\frac{\text{sum (your lab grades)} - \text{min (your lab grades)}}{\text{sum (total lab grades)} / 100}$$

Grading Policy

Raw grade weights

labs (35%) + midterms (20% each) + final (25%)

Letter grades are curved (no predetermined cutoffs)

Mean/median will be around B/B+

Grading policy may be subject to change

Expectations

Prerequisites

2-3 semesters of university-level programming

e.g., 1004 (+ 1006) + 3134

You must know the following (e.g., from Java or Python):

- imperative programming (i.e., if, loops, functions)
- recursion
- linked lists

No prior knowledge of C required

Course Content

UNIX systems programming in C

File I/O, TCP/IP networking, process management

Version control, build systems, command-line interface

Reading, integrating, and testing code

Course Expectations

12 hours/week *nominal* workload for a 4-credit course

Keep up with material covered in lecture and recitations

Read all [ANN] emails on the cs3157 listserv

Academic Integrity

Please do not cheat!

Be fair to your classmates and teaching staff

Academic honesty policies (required reading)

<https://cs3157.github.io/www/2022-9/honesty.html>

First Steps

First Steps

Lab 0

<https://cs3157.github.io/www/2022-9/lab0.html>

Complete by Sep 8 Thursday, 11:59pm!

Expect email about your CLAC account

Lab 1 will be announced via the listserv later this week

Why?

Follow the River and You Will Find the C

SIGCSE 2011 paper by Jae Woo Lee et al.

Link to paper can be found on the course homepage

Transition from object-oriented programming to other programming paradigms

Read it now, and again after completing this class

Why C?

Widely used for low-level systems where precision is important

Simplicity \Rightarrow get closer to understanding a complete picture

It's just another language

Why UNIX?

Broaden your view of computing:

single program



ecosystem of programs,
machines, and developers

Foundation of real-world systems

The command line: alternative perspective to your machine