CS 137: Algorithms in the Real World   Spring 2021

Course Syllabus

Information At-A-Glance

Instructor	
Name:	**Adam Blank**
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Office:	ANB 115
Office Hours:	
	TBD
Or by private meeting.	

Course Website
https://algos.world
Visit early. Visit often.

Lecture
Zoom on TR
01:00 PM – 02:25 PM

Course Overview

This course introduces algorithms in the context of their usage in the real world. The course covers compression, advanced data structures, semi-numerical algorithms, cryptography, computer algebra, and parallelism. The goal of the course is for students to see how to use theoretical algorithms in real-world contexts, focusing both on correctness and the nitty-gritty details and optimizations. Implementations focus on two orthogonal avenues: speed (for which C is used) and algorithmic thinking (for which Python is used).

Because this is a lot of material, we had to choose topics to *focus* on at the expense of the remaining topics. In particular, we have chosen lossless compression, multi-precision integer operations, RSA cryptography, parsing, and string matching.

Expectations

We expect that *coming into the course*, you. . .

- have prior exposure (but not necessarily proficiency) with the C programming language

- have taken CS 24 or equivalent

- are ready to work in a team

- will focus on learning and not grades

Alpha Build

This term is the *alpha build* of this course. Your instructor hopes that the materials are polished enough, but there will inevitably be issues with some of them. If you find a typo, mistake, or clarity issue, please bring it to Adam's attention as soon as possible. We will keep track of student contributions and this sort of help can contribute to a bump (up) in your final grade.

Assessment

There will be no exams in this course. The only assessments are "projects" (often multi-week). Nonetheless, we expect you to understand *why* the algorithms you are implementing actually work which we will discuss in lecture.

Getting Help

Please don't be afraid to ask for help if you don't understand something. Adam holds *at least three* office hours a week, and they get lonely and bored if you don't show up! They also shows up early to lecture and is happy to answer any questions you might have before or after lecture.

At office hours, you can ask for clarification on a lecture (or for a *repetition* of the lecture!). You can ask for help with a frustrating part of the homework. You can even show up just to tell us you're frustrated and vent.

Here's some first steps on how to get help:

- Come to office hours
- Ask someone on course staff questions before/after lecture, etc.
- Post on Ed asking a question

Collaboration & Academic Integrity

Our collaboration policy boils down to "be reasonable". You may not read or discuss any code written by anyone except your partner. You may not write, copy, or modify code for any other group. You may not read, copy, or modify implementations (or pseudocode) of the projects (or parts thereof) found on the internet. You may discuss high-level design decisions with other groups. You may share tests with other groups provided that you share them with the course staff as well. Any level of collaboration between groups beyond the items discussed above is considered a violation of this policy. We reserve the right to modify or clarify this policy as needed.