15-122: Principles of Imperative Computation

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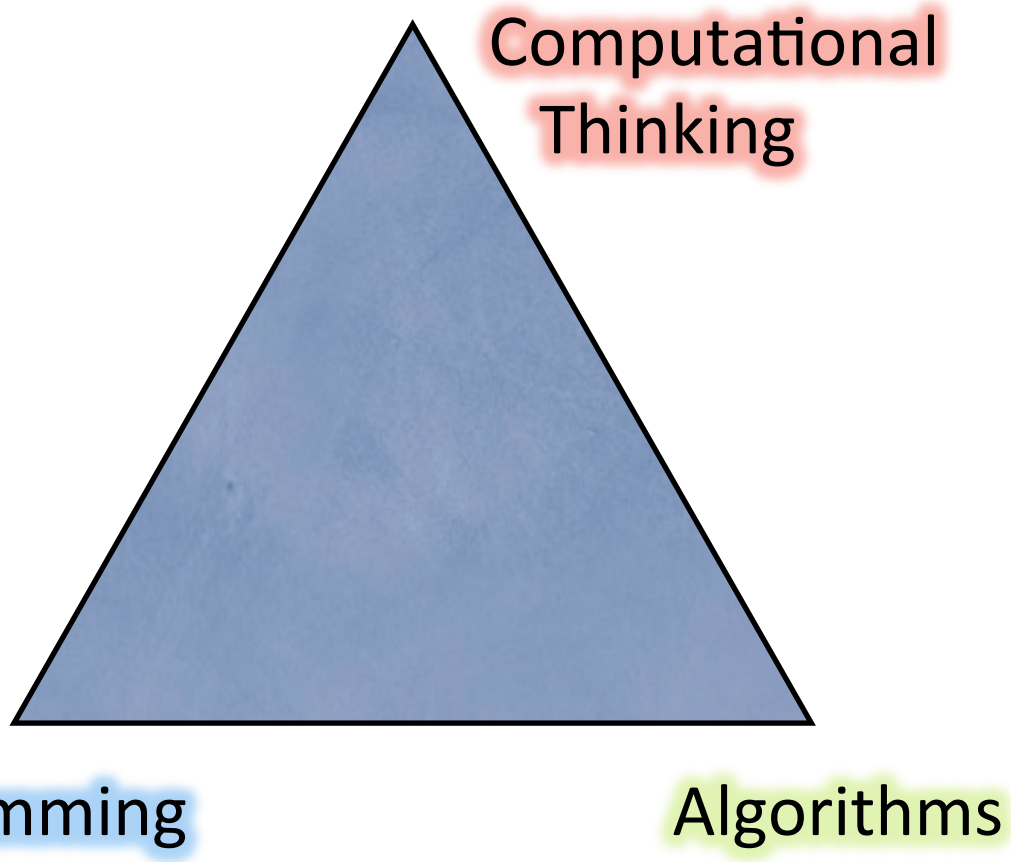
http://www.cs.cmu.edu/~rjsimmon/15122-s15

http://c0.typesafety.net/

Overview

- Goals of this course
- Interactions
  - Lectures, recitations, office hours
- Assessment
  - Quizzes, homework, exams
- A mysterious function!

Goals



Programming Skills

- Transforming algorithmic ideas to code
- Writing tests
- Imperative programming in C and C0
- Basic Unix survival

Algorithmic Ideas

- Asymptotic complexity
  - time/space/amortized
  - worst case/average case
  - important classes: O(1), O(log n), O(n log n), $O(n^k)$, $O(2^n)$
- Big ideas like order and randomness
- Lots of fundamental data structures
  - (Psst… this is often what tech interviews test on!)

Computational Thinking

- “Thinking like a computer scientist” is important for lots of people, not just computer scientists!
- A computer science approach to thinking about the *correctness* of programs

The Big Picture

- Pre- or co-requisites
  - either 15-151 (Math Foundations for CS)
  - or 21-127 (Concepts of Mathematics)
- Counterpart
  - 15-150 (Principles of Functional Programming)
- Pre-requisite for
  - 15-213 (Introduction to Computer Systems)
  - 15-210 (Parallel and Sequential Data Structures and Algorithms)
  - 15-214 (Principles of Software System Construction)

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Lectures

- Tuesday and Thursday
- Please be here, please be active
  - Ask and answer questions, pay attention
  - Lecture notes published after lecture
- Laptops for note-taking only
  - No surfing, email, games…
  - If you want to work on your homework, do so elsewhere
  - If you can see board from the back row, be there
  - Too distracting for other students

Labs and Recitations

- (Hello, TAs!)
- Labs Monday, recitations Friday
- Reinforce lecture material
- Problem solving (and working in groups!)
- How-to programming and tool support
- *Attend the lab/recitation you're registered for*

Laptop Setup Office Hours

- Sunday, 4:30-6:30pm, GHC 4401 (Rashid)
- Get set up using the C0 tools with Andrew Linux
- Format: drop-in for half an hour
- Or do it yourself: http://c0.typesafety.net/tutorial/C0-at-CMU.html

Online communication

- Autolab for homework and grades
- Piazza for announcements, questions, and communication with course staff. Get help, help each other!
- Cluster Linux machines and SSH to shared machines for assignments

Other Resources

- Course home page
  - http://www.cs.cmu.edu/~rjsimmon/15122-s15
  - Schedule, lecture notes, calendar, contact info…
  - Office hours start soon, check Piazza
- C0 home page
  - http://c0.typesafety.net/
  - Tutorial, reference, examples, binaries

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Assessment

- 50% - Exams (2 midterms and a final)
- 40% - Weekly Homework
  - Programming usually due Thursday 10pm through Autolab
    - 4 late days total, max 1 day per assignment
    - Download assignments and code from Autolab
    - Style grading
  - Written usually due Monday by 5:30pm in person
    - No late days, turn in Tuesday in lecture for a significant penalty
    - *Don't hand in work for other people*
- 10% - Quizzes and Lab participation
  - Labs Monday, Quizzes Fridays
  - Basically: make an good effort to get full credit

http://www.cs.cmu.edu/~rjsimmon/15122-s15/schedule.html

Academic integrity

- Quizzes, exams, homework *must be your own*
- *You* must hand in your work
- OK: discussion of course material, practice problems, study sessions, going over handed-back homework in groups
- Not OK: copying or discussing answers, looking at or copying code (even parts)
- Not OK: talking through the assignment as you code with a classmate

- We use MOSS to catch code duplication
- If you make a mistake, come to us, don't let us come to you

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A Mysterious Function Approaches!