Welcome to CS 61A!

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Office hours in 781 Soda (starting next week)
Wed 10am-11am & Thurs 10am-11am
By appointment: denero.org/meet.html

Fastest way to get answers: piazza.com/berkeley/spring2018/cs61a
Contact me & heads of staff: cs61a@berkeley.edu

The 61A Community

44 teaching assistants (TAs), formally known at Berkeley as UGSIs:
• Teach lab & discussion sections
• Hold drop-in office hours
• Lots of other stuff: develop assignments, grade exams, etc.

50+ mentors:
• Teach mentoring sections
• Hold drop-in office hours
• Lots of other stuff: homework parties, mastery sections, etc.

250+ academic interns help answer individual questions & check your progress

1,300+ fellow students make CS 61A unique

Parts of the Course

Lecture: Videos posted to cs61a.org before each live lecture
Lab section: The most important part of this course (next week)
Discussion section: The most important part of this course (this week)
Staff office hours: The most important part of this course (next week)
Online textbook: http://composingprograms.com

Weekly homework assignments, three exams, & four programming projects
Lots of optional special events to help you complete all this work

An Introduction to Computer Science

What is Computer Science?

The study of:
What problems can be solved using computation,
How to solve those problems, and
What techniques lead to effective solutions

Systems
Artificial Intelligence
Graphics
Security
Networking
Programming Languages
Theory
Scientific Computing

Answers Questions
Translation

Decision Making
Robotics
Natural Language Processing

What problems can be solved using computation,
How to solve those problems, and
What techniques lead to effective solutions

What is This Course About?

A course about managing complexity
Mastering abstraction
Programming paradigms
An introduction to programming
Full understanding of Python fundamentals
Combining multiple ideas in large projects
How computers interpret programming languages
Different types of languages: Scheme & SQL
A challenging course that will demand a lot of you

Alternatives to CS 61A

python
λ
SQL
CS 10: The Beauty and Joy of Computing

Designed for students without prior experience
A programming environment created by Berkeley, now used in courses around the world and online
An introduction to fundamentals (& Python) that sets students up for success in CS 61A
Spring 2018: Dan Garcia
20+ person waitlist
More info: https://cs10.org/sp18/

Data Science 8: Foundations of Data Science

Fundamentals of computing, statistical inference, & machine learning applied to real-world data sets
More statistics than computer science
Great programming practice for CS 61A
Cross-listed as CS C8, Stat C8, & Info C8
Spring 2018: Ani Adhikari
100+ person waitlist
More info: http://data8.org/sp18

Course Policies

Learning

Community

Course Staff

Details...

http://cs61a.org/articles/about.html

Expressions

Types of expressions

An expression describes a computation and evaluates to a value

\[18 + 69\]
\[\frac{6}{23}\]
\[\sin \pi\]
\[\log_2 1024\]

\[2^{100}\]
\[7 \mod 2\]
\[\sum_{i=1}^{10} \frac{69}{18}\]

\[\lim_{x \to 2} \frac{1}{x-2}\]

\[\sqrt{1493161}\]

Call Expressions in Python

All expressions can use function call notation
(Demo)
Anatomy of a Call Expression

![Diagram of an expression tree]

Operators and operands are also expressions.

Evaluation procedure for call expressions:

1. Evaluate the operator and then the operand subexpressions.
2. Apply the function that is the value of the operator subexpression to the arguments that are the values of the operand subexpression.

Evaluating Nested Expressions

![Expression tree diagram]

Value of subexpression: 224

1st argument to mul: add(4, mul(4, 6))

Value of the whole expression: add(4, mul(4, 6))