Welcome to Berkeley Computer Science!

How to contact me:
denero@berkeley.edu
piazza.com/berkeley/fall2015/cs61a

Fall 2015 office hours:

781 Soda
Monday 3pm–4pm
Thursday 10am–11am
Fridays by appointment
denero.org/meet
The Course Staff

40+ **Teaching Assistants** (GSIs/UGSIs) run labs, discussions, and office hours

30+ **Tutors** are your personal programming mentors

150+ **Lab Assistants** ensure that you don’t get stuck for too long
Parts of the Course

**Lecture:** Videos posted to cs61a.org before each live lecture

**Lab:** The most important events in this course

**Discussion:** Also the most important events in this course

**Office Hours:** Also the most important events in this course [11–5 M–Th & 11–1 Friday]

**Online textbook:** http://composingprograms.com

Weekly homework assignments, three exams, quizzes, & four programming projects

Lots of special events
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

...
What is This Course About?

• A course about managing complexity
  ▪ Mastering abstraction
  ▪ Using programming paradigms
  ▪ Completing big projects

• An introduction to Python
  ▪ Full understanding of fundamentals
  ▪ Learning through implementation
  ▪ How computers interpret programming languages

• A challenging course that will demand a lot of you
Other Courses
CS 61AS: Self-Paced 61A

You choose the pace! The course can be completed over two semesters

Extra content for people without prior programming experience

A brilliant textbook, interesting projects, a great language, and a dedicated course staff

More info: cs61as.org
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

More info: cs10.org
Data Science 8: Foundations of Data Science

Fundamentals of computing and inference applied to real-world data

Great programming practice for CS 61A

In Fall 2015, piloted as Stat 94 (CCN: 87470)

More info: data8.org & databears.berkeley.edu
Course Policies
Course Policies

Learning
Community
Course Staff

Details...

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

Asking questions is highly encouraged

- Discuss everything with each other; learn from your fellow students!
- Homework can be completed with a partner
- Projects should be completed with a partner
- Choose a partner from your discussion section

The limits of collaboration

- One simple rule: Don’t share your code, except with your partner
- Copying project solutions causes people to fail this course
- We really do catch people who violate the rules, because...
  - We also know how to search the web for solutions
  - We use computers to check your work

Build good habits now
Expressions
Types of expressions

An expression describes a computation and evaluates to a value

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

$2^{100}$  $\sqrt{3493161}$  $\lim_{x \to \infty} \frac{1}{x}$

$7 \mod 2$  $\sum_{i=1}^{100} i$  $\begin{pmatrix} 69 \\ 18 \end{pmatrix}$

$| - 1869 |$
All expressions can use function call notation

(Demo)
Anatomy of a Call Expression

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

\[ \text{mul}(\text{add}(2, \text{mul}(4, 6)), \text{add}(3, 5)) \]
Evaluating Nested Expressions

Expression tree

Operand subexpression

1st argument to mul

Value of subexpression

Value of the whole expression
Functions, Objects, and Interpreters

(Demo)