Welcome to Berkeley Computer Science!

Spring 2015 office hours:
781 Soda
Wednesday 10am-12pm &
Friday by appointment:
http://denero.org/meet

The Course Staff
Teaching Assistants (GSIs/UGSIs) run discussion sections, labs, and office hours

27 Group Tutors are your personal programming mentors
Over 300 Lab Assistants ensure that you don’t get stuck for too long

An Introduction to Computer Science

What is Computer Science?

- 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
Translation

Answering Questions

What is This Course About?

- A course about managing complexity
- Mastering abstraction
- Programming paradigms
- Not just about 0’s and 1’s
- An introduction to Python
- Full understanding of language fundamentals
- Learning through implementation
- How computers interpret programming languages
- A challenging course that will demand a lot of you

Course Policies
Alternatives to This Course

CS 61AS: Self-Paced CS 61A
CS 10: The Beauty and Joy of Computing

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

- $18 + 69$
- $6 \div 3$
- $\sin \pi$
- $\log_2 1024$
- $2^{200}$
- $f(x) = \sum_{i=1}^{100} \frac{(i)}{18}$
- $7 \mod 2$
- $\sqrt{3453161}$

Call Expressions in Python

All expressions can use function call notation:

$\text{demo}(\text{add}(2, \text{mul}(4, 5)), \text{add}(3, 5))$

Evaluating Nested Expressions

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

Expression tree

Operand subexpression

Value of subexpression

Value of the whole expression

1st argument to mul

Functions, Objects, and Interpreters

(Demo)