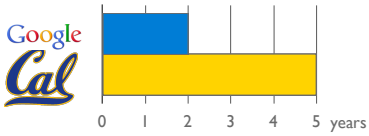
61A Lecture 1

Friday, August 24, 2012

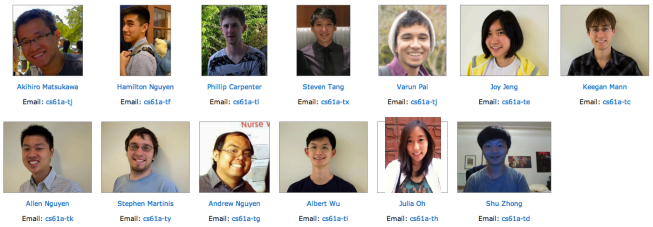
Welcome to Berkeley Computer Science!

The Course Staff

John DeNero



TAs run sections, labs, and also everything else



Readers are your personal programming mentors

Lab Assistants ensure that you don't get stuck

What is Computer Science?

- Systems
- Artificial Intelligence
  - Computer Vision
  - Planning
  - Robotics
  - Natural Language Processing
  - ...
- Graphics
- Security
- Networking
- Programming Languages
- Theory
- Scientific Computing
- ...

What is 61A?

- A course about managing complexity
  - Mastering abstraction
  - Not about 1's and 0's
- An introduction to Python
  - All the features we really need: introduced today
  - Understanding through implementation
  - Programs that run other programs: meta-evaluation
- A challenging course that will demand **a lot** of you

What is 61A?

Plone Conference. Photo courtesy of Kriszta Szita

Alternatives to 61A

CS 61AS: Self-paced 61A

CS 10: The Beauty and Joy of Computing

Course Policies

The purpose of this course is to help you learn

The staff is here to make you successful

All the details are online:

http://inst.eecs.berkeley.edu/~cs61A/fa12/about.html

Collaboration

- Discuss everything with each other
- **EPA:** Effort, participation, and altruism
- Homework can be completed with a partner
- Projects *should* be completed with a partner
- Find a project partner in your section!

The limits of collaboration

- One simple rule: don't share code
- Copying project solutions is a serious offense!

Announcements

- Next week, both section and lab will meet in the lab rooms.
- Homework 1 is posted! All homework is graded on effort.
- If you are on the waitlist, still complete assignments!
- Midterms are on 9/19 and 10/24. Final exam is on 12/13.
- Read the lecture notes *before* you come to lecture!

Types of expressions

An expression

describes a computation

and evaluates to a value

$18 + 69$ $\quad \frac{6}{23}$ $\quad \sin \pi$ $\quad \sqrt{3493161}$

$f(x)$ $\quad \sum_{i=1}^{100} i$ $\quad \binom{69}{18}$

$|-1869|$

Call Expressions in Python

All expressions can use function call notation

(Demo)

Anatomy of a Call Expression

```
add ( 2 , 3 )
```

Operator *Operand 0* *Operand 1*

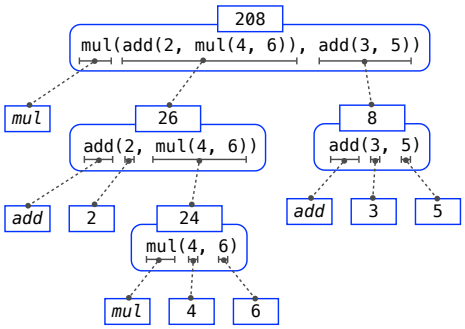
Operators and operands are expressions

So they evaluate to values

Evaluation procedure for call expressions:

1. Evaluate the operator and 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



Data, Functions, and Interpreters

Data: The things that programs fiddle with

"The Art of Computer Programming"

2

Shakespeare's 37 plays

Donald Knuth
(Ka-NOOTH)

Functions: Rules for manipulating data

Count the words in a line of text

Add up numbers

Pronounce someone's name

Interpreter: An implementation of the procedure for evaluation