

Objectives

- Concluding CSCI111
 - Other programming languages

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Applying What You Know To Other Languages

- At the beginning of the semester, some of you wondered
 - “Why Python?”
 - “Will I be able to read/write programs in other programming languages?”
- We’ll answer the first question by showing that you can do the second

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Applying What You Know To Other Languages

- **Syntax:** symbols used
- **Semantics:** what the symbols *mean*

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What is the Python2 Program Doing?

- Page 4/5 of handouts

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What is the Python Program Doing?

- Getting a line of input from “**standard in**” (from the user)
- Splitting the input into integers
- Calculating the result to a formula
- Deciding if a student is admitted, based on the result of the formula

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Admissions Problem

- Binary University decides to admit students based on a formula that weighs various factors
 - Scores of 70 or better are admitted
- Input: single line, 4 integers, in order below

Category	Range	Weight Factor (Multiplier)
High School GPA	0 - 10	0.25
SAT score	600-2400	.01
AP Courses	0-10	10
Intangibles	1-10	8

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Example Input/Expected Output

Input	Expected Output
0 1 0 300	DENY
6 10 99 2390	ADMIT
0 7 82 1500	ADMIT
2 5 0 990	DENY
2 5 0 1000	ADMIT
2 5 0 1010	ADMIT

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What is the Python Program Doing?

- Getting a line of input from “**standard in**” (from the user)
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Identify these pieces in the other programs

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Example Bash Program

- `printLab.sh`

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Comparing Programming Languages

- How is the syntax/semantics of these languages different from Python?
- What is easier or harder to do in these other programming languages than in Python?

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Comparing Programming Languages

- Benefits of Python:
 - Simpler syntax (e.g., fewer `{}` and `()`)
 - Can cover some content with less overhead
- Drawbacks
 - Data types aren't explicit (static)
 - Can be harder for you to remember and keep straight
 - Not compiled explicitly beforehand
 - Keep executing to find all the syntax bugs
 - Doesn't check: “you're passing a file instead of a string”
 - Allows you to do some things that won't work in other programming languages

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Who Uses Python?

- Google
 - Backends of Gmail and Google Maps and search-engine internals
- NASA
 - Collaborative engineering
- Yahoo
 - Groups: Maintain discussion groups; Maps
- RedHat Linux
 - System infrastructure
- Original BitTorrent client; Youtube; Civilization IV

Source: <http://wiki.python.org/moin/OrganizationsUsingPython>

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Tiobe Index

Based on number of hits on web

Position Mar 2012	Position Mar 2011	Delta in Position	Programming Language	Rating Mar 2012	Delta Mar 2011	Status
1	1	=	Java	17.110%	-2.60%	A
2	2	=	C	17.087%	+1.82%	A
3	4	↑	C#	8.244%	+1.03%	A
4	3	↓	C++	8.047%	-0.71%	A
5	8	↑↑↑	Objective-C	7.737%	+4.22%	A
6	5	↓	PHP	5.555%	-1.01%	A
7	7	=	(Visual) Basic	4.369%	-0.34%	A
8	10	↑↑	JavaScript	3.866%	+1.52%	A
9	6	↓	Python	3.291%	-2.45%	A
10	9	↓	Perl	2.703%	+0.73%	A
11	13	↑↑	Delphi/Object Pascal	1.727%	+0.73%	A
12	30	↑↑↑↑↑↑↑	PL/SQL	1.418%	+1.01%	A
13	11	↓	Ruby	1.413%	-0.09%	A
14	23	↑↑↑↑↑↑↑	Transact-SQL	0.925%	+0.38%	A
15	15	=	Lisp	0.922%	-0.01%	A

<http://www.tiobe.com/index.php/content/paperinfo/tpci/index.html>

Conclusions

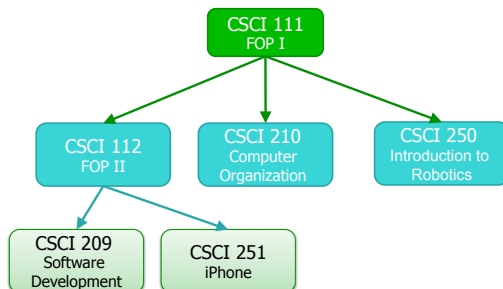
- See impact of computer science on your life
- Understand some of the computing issues better
 - Taking out some of the mystery
 - Security, testing, debugging, efficiency
- Algorithms are everywhere
 - Process for solving problems, **efficiently**
 - Mapping human intuition to systematic/automatic process

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Where Can You Go from Here?



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Reminders

- Finals are taken in the lab classroom
 - No computers
 - If need to change your time, sheet outside the CS department office
- BOTH evaluations due Monday at midnight on Sakai (tests and quizzes)
 - Last checked: 7 submissions of BOTH evaluations
- Take-home essay due Friday at 5 p.m.
 - End of exam period
- All lab work and extra credit articles must be submitted by **Wed**
- Office hours: Monday and Tuesday afternoons
 - Others by appointment

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Broader Issues

- Articles:
 - Tech education, Puzzles of Cyberspace, DARPA Urban challenge, Excel Bug, Google Maps Bugs, Digital Humanities (culture genome/art fraud), Sensor Networks, Social Networks, OLPC
- Questions
 - Most liked article? Least liked article?
 - Who found the articles overall least interesting?
 - Most interesting?

Koven
John K
Gaurav
Deirdre
Gabi

Phil
Colby
Mary
Lijiang
Hang

Shannon
Trang
Sam
John G
Connor

Cory
Luke
Kari
Will
Josh

Emily
Drew
Haley
Jonathan

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Broader Issues

- One Laptop Per Child
 - An experiment on bringing cheap but educational technology to poor children
- What challenges did OLPC face and how did that affect their design decisions?
- What are some unusual features of the laptop?
- What does this technology mean for better-off countries?
- Is this project worthwhile?
- What has changed (relevant to this project) since this article in 2007?

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Discussion

Challenge	Design Decision
Lack of power	New, cheap battery; Consumes less power; Alternative power sources: solar power, pull cord
Software bloat	Rewrite code more compactly, efficiently
Environment	Dust proof, drop proof, light
Users: children	Simple user interfaces; tiny keyboard; lightweight; applications keep students interested
Cost	Linux, Python, open-sources tools; cheaper battery; no hard drive; no CD/DVD drive

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