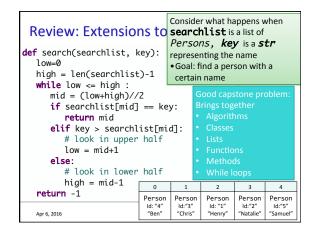
#### **Objectives**

• Comparing Programming Languages

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# Review: Summary of Modifications to Binary Search

- Add a search method
  - > Takes as parameter the name to search for
- Check the name of the Person that is at the midpoint, lowercased
- After found, add to the list of Persons who match
  - > Get the Persons before and after that person in the list that have the same name and add to list
- Represent (in method) and handle (in UI) when no people with that name
- For "most intuitive" results:
  - Lowercase the key
    - Changes algorithm again slightly

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#### Review

- How do you create a 2D list?
- How do you get the 2<sup>nd</sup> element in the 3<sup>rd</sup> "row" of a list?
- How do you find the number of lists in a 2D list?
- How do you find the number of elements in one of those lists?

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# Applying What You Know To Other Languages

- At the beginning of the semester, some of you wondered
  - "Why the Python programming language?"
  - "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 Python3 Program Doing?

• Page 1 of handouts

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### What is the Python3 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)
- Splitting the input into integers
- Calculating the result to a formula
- Deciding if a student is admitted, based on the result of the formula

Identify these pieces in the other programs

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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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# Example Bash Program

printLab.sh

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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		
Mar 2016	Mar 2015	Change	Programming	J Language	Ratings	Change
1	2	^	Java (	CSCI209	20.528%	+4.95%
2	1	•	С (	CSCI210	14.600%	-2.04%
3	4	^	C++		6.721%	+0.09%
4	5	^	C#		4.271%	-0.65%
5	8	^	Python	CSCI111, 112	4.257%	+1.64%
6	6		PHP	,	2.768%	-1.23%
7	9	^	Visual Basic .1	NET	2.561%	+0.24%
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10	18	*	Ruby		2.238%	+1.21%
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#### **Course Evaluations**

- On Sakai, due Sunday
- Incentive
  - ➤ If 60% of students complete evaluation, 1% Extra Credit on lab grades
  - For each additional 10% of students who complete evaluation, 1% EC on lab grades
  - > Total possible EC: 5%

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# **Looking Ahead**

- Friday: Lab 11 due
- Friday: review computer science
  - > Where we've been and where you can go
- Friday bring your exam questions and envelopes
  - ➤ Practice

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