# CompSci 101

**Introduction to Computer Science**

<table>
<thead>
<tr>
<th></th>
<th>Susan</th>
<th>Jackie</th>
<th>White</th>
<th>Rodger</th>
<th>Velios</th>
<th>Long</th>
<th>Lund</th>
<th>Frost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Smith</td>
<td>Brandt</td>
<td>Rodger</td>
<td>Crackers</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1</td>
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<td>Long</td>
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Nov 1, 2016

Prof. Rodger
Announcements

• Reading and RQ due next time
• APT 6 due today, APT 7 out
  – Do more APTs to catch up….
• APT QUIZ 2 – Nov. 6-8
• Next Assignment out Thursday
• Lab this week!

• Today:
  – Processing data – how to organize it?
  – enumerate

compsci 101, fall 2016
Lab this week! - Odds with poker!
ACM Programming Contest

• Need volunteers to help on Saturday Nov 5 from 11:20am to 6pm. (includes food)

• Contest
  – Team of three, one computer, 6-8 problems, 5 hours
  – Problems “APT-like”

• See Piazza post for how to sign up
Registration time…

• What CS courses can you take next?
  – CompSci 201
  – CompSci 230

  – CompSci 230 is prereq for CompSci 330
  – CompSci 201 is prereq for many electives
When Halloween and Computer Science COLLIDE!
Problem: Longest Name

Given a list of names (one word only) and a letter (assume names start with capital letter, and letter is capital)


Find the longest name that starts with that letter
Code for longest name

def longestName(alist, letter):
    longest = ''
    for name in alist:
        if letter == name[0] and
           len(name) > len(longest):
            longest = name
    return longest

How do you modify to find the location (position) of the longest name?
Problem: Find the **position** of the longest name that starts with that letter.
Enumerate

- An iterator, generates a sequence
- Generates tuples of (index, item)
- Used with for loop to get both index and item
- for (index, item) in enumerate(somelist):
  - You get both at the same time!
Solve previous problem with enumerate
Problem: Popular Name

• Given a list of names, determine the most popular first name and print that name with all of its last names.

• Input: Names are always two words, names are in a file. If multiple names are on the same line they are separated by a “:”

• Output: Most popular first name, followed by a “:”, followed by corresponding last names separated by a blank
Example Input File with 5 lines

Susan Smith: Jackie Long: Mary White
Susan Brandt
Jackie Johnson: Susan Rodger: Mary Rodger
Eric Long: Susan Crackers: Mary Velios
Jack Frost: Eric Lund

Corresponding Output

Susan: Smith Brandt Rodger Crackers
What do you need to solve this problem?
bit.ly/101f16-1101-2
How might one organize the data to solve this problem?

How many different ways to solve this problem?
One way to solve

• Create a list of unique first names
• Create a list of lists of last names that are associated with each first name
## Example – two lists

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- Jackie in position 1
- Jackie’s last names in position 1
Now can we solve the problem?

• Compute those two lists that are associated with each other
  – List of unique first names
  – List of corresponding last names
• Compute the max list of last names
• Now easy to print the answer.
• See popular.py
Look at the code for popular.py

• Which datafile is read in?
• What format is namelist in?
• Write the code for uniqueFirstNames
Write the code:
www.bit.ly/101f16-1101-4

• allLastNames

• correspondingLastNames

• printFirstWithLasts
Finish

maxnum = max([len(item) for item in lastNames])
print maxnum

lastIndex = [index for (index, v) in enumerate(lastNames) if len(v) == maxnum]
print "first name with most last names is:"

Another way – list of lists

First word in each list is a first name.
The rest are last names.

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Expanding the Problem

• Suppose we want to read from multiple data files
  names1.txt, names2.txt, names3.txt

See processFiles in popular.py