Problem: Longest Name

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

names = ['Helen', 'Bob', 'Bart', 'Hugh']

Find the longest name that starts with that letter

Code for longest name

```python
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?
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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

<table>
<thead>
<tr>
<th>Example – two lists</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unique First names</strong></td>
</tr>
<tr>
<td>0 'Susan'</td>
</tr>
<tr>
<td>1 'Jackie'</td>
</tr>
<tr>
<td>2 'Mary'</td>
</tr>
<tr>
<td>3 'Eric'</td>
</tr>
<tr>
<td>4 'Jack'</td>
</tr>
</tbody>
</table>

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:
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• 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.

<table>
<thead>
<tr>
<th></th>
<th>Susan, Smith, Brandt, Rodger, Crackers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jackie, Long, Johnson</td>
</tr>
<tr>
<td>2</td>
<td>Mary, White, Rodger, Velios</td>
</tr>
<tr>
<td>3</td>
<td>Eric, Long, Lund</td>
</tr>
<tr>
<td>4</td>
<td>Jack, Frost</td>
</tr>
</tbody>
</table>

Expanding the Problem

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

See processFiles in popular.py