Week 12
CSC111 — Fall 2015

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Remembering Prior Information: Dictionaries

Examples and Demo

Something Completely Different...
List Data-Structure

dogs = [ "Ralph", "Blake", "Fido", "Rex", "Milou" ]
## List Data-Structure

dogs = [ “Ralph”, “Blake”, “Fido”, “Rex”, “Milou” ]

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>“Ralph”</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>“Blake”</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>“Fido”</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>“Rex”</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>“Milou”</td>
<td></td>
</tr>
</tbody>
</table>
**List Data-Structure**

dogs = [ "Ralph", "Blake", "Fido", "Rex", "Milou" ]

<table>
<thead>
<tr>
<th>Index</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>&quot;Ralph&quot;</td>
</tr>
<tr>
<td>1</td>
<td>&quot;Blake&quot;</td>
</tr>
<tr>
<td>2</td>
<td>&quot;Fido&quot;</td>
</tr>
<tr>
<td>3</td>
<td>&quot;Rex&quot;</td>
</tr>
<tr>
<td>4</td>
<td>&quot;Milou&quot;</td>
</tr>
</tbody>
</table>

dogs
```python
text = """Fido 0
Fido 10
Rex 0
Milou 9
Ralph 3
Fido 8
"""

def main():
    dogsFound = []
    # look at each line of text
    for line in text.split("\n"):  
        # split the line on white space
        fields = line.capitalize().strip().split()  
        # if invalid, skip
        if len(fields) != 2:
            continue

        # get dog name
        name = fields[0]

        # have we seen it yet?
        if not name in dogsFound:
            dogsFound.append(name)

        print("We have found", len(dogsFound), "dog(s)")
        print("The dogs found are", ", ".join(dogsFound))

main()
```
Lists are good, but…

if not name \textbf{in} dogsFound:

• The \textbf{in} operator can be slow on very long lists…

• It would be nice to index by name, instead of using numbers…
What we’d like:

text = """"Fido 0
Fido 10
Rex 0
Milou 9
Ralph 3
Fido 8
""""
What we’d like:

text = """"Fido 0
Fido 10
Rex 0
Milou 9
Ralph 3
Fido 8
"""

<table>
<thead>
<tr>
<th>Name</th>
<th>Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Fido&quot;</td>
<td>8</td>
</tr>
<tr>
<td>&quot;Rex&quot;</td>
<td>0</td>
</tr>
<tr>
<td>&quot;Milou&quot;</td>
<td>9</td>
</tr>
<tr>
<td>&quot;Ralph&quot;</td>
<td>3</td>
</tr>
</tbody>
</table>
text = """Fido 0
Fido 10
Rex 0
Milou 9
Ralph 3
Fido 8
"""

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Fido&quot;</td>
<td>8</td>
</tr>
<tr>
<td>&quot;Rex&quot;</td>
<td>0</td>
</tr>
<tr>
<td>&quot;Milou&quot;</td>
<td>9</td>
</tr>
<tr>
<td>&quot;Ralph&quot;</td>
<td>3</td>
</tr>
</tbody>
</table>

dogs
Dictionaries

- Dictionaries are **Data Structures**
- The item used as an index is called the **key**
- The item associated with the key is the **value**
- A dictionary is a container, or a **collection of (key, value) pairs**
- **Searching** for a key in a dictionary is a very **fast** operation.
text = """Fido 0
Fido 10
Rex 0
Milou 9
Ralph 3
Fido 8
"

def main():
    dogsFound = {}
    # look at each line of text
    for line in text.split( "\n" ):
        # split the line on white space
        fields = line.capitalize().strip().split()

        # if invalid, skip
        if len( fields ) != 2:
            continue

        # get dog name
        name = fields[0]
        age = int( fields[1] )

        # have we seen it yet?
        dogsFound[ name ] = age

        print( "We have found", len( dogsFound ), "dog(s)" )
        print( "The dogs found are:"
    for name in dogsFound.keys():
        print( name, dogsFound[ name ] )

main()
Ideas...

text = """1710 Sessions House
1715 Drew Hall (cdo)
1810 Eleanor Duckett House
1810 Mary Ellen Chase House
1825 Capen Annex
1825 Capen House
1870 138 Elm
1872 Tyler Annex
1873 Sessions Annex
1875 College Hall

..."""
Ideas...

text = """Field, The Pitch, light green, Alex, 1, 173, 193, 269
House, Tyler, orange, Alex, 1, 233, 408, 229
Building, McConnell Hall, red, Alex, 1, 271, 394, 288
River, Paradise Pond, blue, Alex, 1, 4, 5, 6
..."""
And now, for something completely different...

http://cs.smith.edu/dftwiki/index.php/CSC111_And_now,_something_completely_different