Agenda

• Announcements
• List comprehension
• Set
• Password example
List comprehension

\[
[\text{element} \ \text{for element} \ \text{in} \ \text{sequence} \ \text{if} \ \text{element}]
\]

\[
[\ \text{x} \ \text{for loop} \ \text{if} \ ]
\]

\[
\text{pay} = [850.0, 1250.0, 900.0, 1400.0, 1100.0]
\]

\[
\text{lowPay} = [\ \text{pay} \ \text{for pay} \ \text{in} \ \text{salary} \ \text{if} \ \text{pay} < 1000.00 \ ]
\]

\[
>\>[850.0, 900.0]
\]
Set

- Set is similar to a list, but can only have unique elements.
- Set are unordered. No index.
- Use `set()` or `set(list)` to create a set. Then add.

```python
passengers = set(["John", "Bob", "Lisa"])
passengers.add("peter")
>> set(["John", "Bob", "Lisa", "peter"])
```
Set

We often use for comparison

<table>
<thead>
<tr>
<th>Operation</th>
<th>Function</th>
<th>Short</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union</td>
<td><code>set1.union(set2)</code></td>
<td></td>
</tr>
<tr>
<td>Intersection</td>
<td><code>set1.intersection(set2)</code></td>
<td>&amp;</td>
</tr>
<tr>
<td>Difference</td>
<td><code>set1.difference(set2)</code></td>
<td>-</td>
</tr>
<tr>
<td>Symmetric difference</td>
<td><code>set1.symmetric_difference(set2)</code></td>
<td>^</td>
</tr>
</tbody>
</table>

```
    O | O
   / \/
  /   \ 
```

```
    O     O
   / \   / \ 
  /   \ /   \ 
```

```
    O     O
   / \   / \ 
  /   \ /   \ 
```

```
    O     O
   /     / 
  /     /  
```

```
    O     O
   /     / 
  /     /  
```
Daphne Koller

Computers learn to diagnose breast cancer?

• AI and Machine Learning
  – http://www.youtube.com/watch?v=DX2_9ntOcQI

"But to practice problem-solving, a student must first master certain concepts. By providing a cost-effective solution for this first step, we can focus precious classroom time on more interactive problem-solving activities that achieve deeper understanding — and foster creativity."

Coursera Founder, NY Times, December 5, 2011
# WHAT SHOULD YOU REA**L**LY BE AFRAID OF?

Fear, as FDR noted in 1933, paralyzes those who succumb to it. And yet much of what we worry about today is based on hype rather than reality. Yes, media headlines are partially to blame. But some things (sharks!) are just downright scary. Using the most recent U.S. data available, we hereby present a list of unsettling threats and their far riskier counterparts.

<table>
<thead>
<tr>
<th>Threat</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murders</td>
<td>14,180</td>
</tr>
<tr>
<td>Suicides</td>
<td>33,289</td>
</tr>
<tr>
<td>Children abducted by strangers</td>
<td>115</td>
</tr>
<tr>
<td>Children who drown in pools</td>
<td>288</td>
</tr>
<tr>
<td>Burglaries</td>
<td>2.2 million</td>
</tr>
<tr>
<td>Identity thefts</td>
<td>8.3 million</td>
</tr>
<tr>
<td>Shark attacks</td>
<td>28</td>
</tr>
<tr>
<td>Dog bites</td>
<td>4.5 million</td>
</tr>
<tr>
<td>Americans killed by terrorist attacks</td>
<td>33</td>
</tr>
<tr>
<td>Americans who die from seasonal flu</td>
<td>36,171</td>
</tr>
<tr>
<td>Deaths by allergic reaction to peanuts</td>
<td>50–100*</td>
</tr>
<tr>
<td>Deaths by unintentional poisoning</td>
<td>27,531</td>
</tr>
<tr>
<td>Women who die from breast cancer</td>
<td>40,170</td>
</tr>
<tr>
<td>Women who die from cardiovascular disease</td>
<td>432,709</td>
</tr>
<tr>
<td>Fatal airline accidents</td>
<td>321</td>
</tr>
<tr>
<td>Fatal car crashes</td>
<td>34,017</td>
</tr>
<tr>
<td>Americans audited by the IRS</td>
<td>1.4 million</td>
</tr>
<tr>
<td>U.S. deaths</td>
<td>2.4 million</td>
</tr>
</tbody>
</table>

*Annual averages and estimates.

Passwords

http://zd.net/ME10pW


http://on.mash.to/MjlDRs
Passwords

Troy Hunt analysis of leaked Sony password

- People re-use their passwords on different sites.

“The only secure password is the one you can’t remember”
Duke IT Strategies for good passwords

Use lines from a childhood verse:
Verse Line: Yankee Doodle went to town
Password: YDwto#town

Use lines from a favorite song:
Lyric: How Much is that Doggie in the Window?
Password: H$itditw?

City Expression:
Chicago is my kind of town
Password: CimYKot!

Foods disliked during childhood:
Food: rice and raisin pudding
Password: ric&raiPudng

Note: Obviously, you shouldn't use any of the passwords used as examples in this document. Treat these examples as guidelines only.
Password lists on the Internet

• Accessible list of passwords on the Internet: https://dazzlepod.com/site_media/txt/passwords.txt

• Disclosure Project by Dazzlepod
  “The disclosures on this website have been made available publicly so that users can find out if they were exposed as a result of the releases made by hackers.” (https://dazzlepod.com/disclosure/)