

Agenda - for Week 03 - Lists & Lots of Fun Things

Some main points this week:

IMHO, the point this week is to review the most important data structures, be aware of their mutability/immutability ...

Prefatory to responding to input (from users or from files), using various control-of-flow statements; functions (with and without defaults) and creating methods for Objects.

Topics:

- range()
- Using lists and dictionaries
- mutability & non-mutability
- Importing modules
- Parent:child relationships in the data/hierarchical
 - Clustering - RDBMS, network; .xml and DOM (https://developer.mozilla.org/en-US/docs/Web/API/Document_Object_Model/Introduction)
 - JSON

Examples from the medical domain:

- medpie: an information extraction package for medical message board posts, *Bioinformatics* (2012, Mar 1), 28(6): 743-744. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3289922/>
- MedPy <https://pypi.org/project/MedPy/>
- Pillbox: <https://hhs.github.io/pillbox/#api>

Summary:

- **List** is a collection which is ordered and changeable. Allows duplicate members. List uses `[]`
- **Tuple** is a collection which is ordered and unchangeable. Allows duplicate members. Uses `()`
- **Set** is a collection which is unordered and unindexed. No duplicate members. Unchangeable!
Set uses `{ }`
- **Dictionary** is a collection which is unordered, changeable and indexed. No duplicate members.
`thisdict = {`
 `"brand": "Ford",`

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```
"model": "Mustang",  
"year": 1964  
}  
print(thisdict)
```

- Note: Pairs well with .xml and .json [Very important]

Accessing the data - many ways:

- Get the value by key: `x = mydict["cat"]`
- Get the value by key: `x = mydict.get("cat")`

Iteration:

```
for x in mydictionary:
```

Using range():

```
for x in range(2, 30, 3) start, end, step
```

```
menuList = ['a', 'b', 'c', 'd', '1', 'q']  
option = input("Choose menu: a, b, c, d, 1, or q to quit")  
if (option in menuList):  
    <do something(>
```

<https://stackoverflow.com/questions/7571635/fastest-way-to-check-if-a-value-exists-in-a-list>

Functions:

```
def my_function():  
    print("hello.")
```

How might we use this in the future on-the-job? Discussion.

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Decision tree:

<https://medium.com/greyatom/decision-trees-a-simple-way-to-visualize-a-decision-dc506a403aeb>

Specialized libraries:

Scikit: <https://scikit-learn.org/stable/modules/tree.html>

https://scikit-learn.org/stable/auto_examples/plot_multioutput_face_completion.html#sphx-glr-auto-examples-plot-multioutput-face-completion-py