

Libraries (Standard and Otherwise)



Recap of Last Class

- Classes
- Objects
- Packages
- Modules
- Questions?

Math

- <http://docs.python.org/library/math.html>
- Does your math for you and has some nice math constants

```
>>> import math
```

```
>>> math.sqrt(9)
```

```
>>> math.pi
```

```
>>> math.e
```

```
>>> math.log10(210)
```

Random

- <http://docs.python.org/library/random.html>
- Helps add uncertainty to your video games

```
>>> import random
```

```
>>> random.seed(1024)
```

```
>>> random.randint(10, 20)
```

```
>>> random.choice(['Chinese', 'Thai', 'Mexican'])
```

```
>>> random.gauss(10, 2)
```

Datetime

- <http://docs.python.org/library/datetime.html>
- Formats dates and allows to do some operations on them

```
>>> import datetime
```

```
>>> brads_birthday = datetime.date(1987, 9, 10)
```

```
>>> brads_birthday.isoformat()
```

```
>>> weekdays = ["Mon", "Tues", "Wed", "Thurs", "Fri",  
"Sat", "Sun"]
```

```
>>> weekdays[brads_birthday.weekday()]
```

Sys

- <http://docs.python.org/library/sys.html>
- Allows you access different system constructs and utilities

```
>>> import sys
```

```
>>> sys.argv
```

```
>>> sys.exit("You can exit with error like this.")
```

```
>>> sys.path
```

```
>>> sys.path.append("/path/to/your/modules!")
```

OS

- <http://docs.python.org/library/os.html>
- Allows access to different command line tools

```
>>> import os
```

```
>>> os.listdir('.')
```

```
>>> os.path.split('this/path/to/file.txt')
```

```
>>> os.path.splitext('file.txt')
```

```
>>> os.system('echo testing')
```

Urllib2

- <http://docs.python.org/library/urllib2.html>
- Opens urls and manipulates them

```
>>>import urllib2
```

```
>>>url = 'http://wiki.hacdc.org/index.php/Intro_to_Programming'
```

```
>>>page_contents = urllib2.urlopen(url).read()
```

```
>>>output_file = open('data/programming_page.html', 'w')
```

```
>>>output_file.write(page_contents)
```

```
>>>output_file.close()
```


JSON

- <http://docs.python.org/library/json.html>
- Parses JSON objects and makes shiny Python equivalents

```
>>> import json
```

```
>>> json.dumps({'x': 120, 'y': 340})
```

```
>>> json.dumps({'x': 120, 'y': 340},  
sort_keys=True, indent=2)
```

```
>>> json.loads("{\"x\": 120, 'y': 340}")
```

CSV

- <http://docs.python.org/library/csv.html>
- Parses comma separated value files and spreadsheets

```
>>> import csv
```

```
>>> with open('inputfile.csv', 'r') as f:
```

```
...     reader = csv.reader(f)
```

```
...     for row in reader:
```

```
...         print row
```

Pickle

- <http://docs.python.org/library/pickle.html>
- Serializes Python data structures to file

```
>>> import pickle
```

```
>>> with open('save_file.pkl', 'w') as f:
```

```
...     pickle.dump(player1, f)
```

```
>>> with open('save_file.pkl', 'r') as f:
```

```
...     player1 = pickle.load(f)
```

PySerial

- <http://pyserial.sourceforge.net/>
- DUDE it reads and writes to the serial ports!

```
>>> import serial
```

```
>>> ser = serial.Serial('/dev/ttyUSB0', '9600')
```

```
>>> ser.write(chr(12))
```

```
>>> ser.flush()
```

```
>>> ser.read(2)
```

```
>>> ser.close()
```

Fin

- Questions?
- Homework.
 - Do something interesting with at least one of the libraries provided
 - CSV files for radiation data in Japan are being provided
 - JSON url with upcoming hackathon data is being provided
 - Visualize radiation and/or bit.ly data
- Code samples.