Python Demos and Intro, and Tips for the Classroom

Peter Beens
@pbeens
#acse17

URL of this Presentation

https://goo.gl/La8P5g

Interactive Python Shell

www.python.org/shell/

(for trying examples while I demonstrate them)

What's not included in this intro?
(can't do it all in one hour!)

- Math
- if/elif/else
- Functions
- Classes

Why Python?

- Free and open-source
- Large support community
- Excellent beginner language, but also very powerful for professionals
- Clean, clear syntax
- Object-oriented ("everything is an object")
- Cross-platform (Windows, OSX, Linux)
- Dynamically-typed: variables do not need to be predeclared

Who's Using Python?

- Yahoo, Google [Google's Python Course], Industrial Light & Magic, Walt Disney, Blender, Jasc (Paint Shop Pro), NRC, Los Alamos National Laboratory, NASA, Red Hat, Nokia, IBM, and lots of others!
- ...according to https://wiki.python.org/moin/OrganizationsUsingPython

Where to Download Python

- https://www.python.org/

Recommended Editor

- Can use the built-in editor (Idle), but I recommend PyCharm Community Edition (free)
- https://www.jetbrains.com/pycharm/

Some Basic Coding Demonstrations

Note: I am using WinPython for the Jupyter Notebook (aka iPython) examples.

http://winpython.sourceforge.net/
http://jupyter.org/

Basic Keyboard I/O Demo:
1_Basic IO.ipynb

on GitHub: https://goo.gl/mTyFve

Lists Demo:
2_Lists & For Loops.ipynb

on GitHub: https://goo.gl/235AwQ

Looping Demo:
3_Looping & Iterating.ipynb

on GitHub: https://goo.gl/uxKzyc

Retrieving a File from the Web Demo: 4_Reading an Internet File.ipynb

on GitHub: https://goo.gl/w8re4g

String Processing Demo:
5_Strings.ipynb

on GitHub: https://goo.gl/lu1cKv

How to Read Text Files

/cont'd

Reading a File (Line-by-Line)

```python
# read in fruit.txt
f = open('fruit.txt', 'r')
lines = f.readlines()
f.close()

# print file
print(lines)

# create fruit list
fruit = []
for line in lines:
    fruit.append(line.strip())

# print fruit list
print(fruit)
```

```
['apple\n', 'orange\n', 'pear\n',
'grape']

['apple', 'orange', 'pear', 'grape']
```

Reading a File (Entire File)

```python
# read in fruit.txt
f = open('fruit.txt', 'r')
file = f.read()
f.close()

# print file
print(file)

# create fruit list
fruit = file.split()

# print fruit list
print(fruit)
```

```
apple
orange
pear
grape

['apple', 'orange', 'pear', 'grape']
```

My Classroom Resources...

/cont'd

Tutorials

- CS Circles
  http://cscircles.cemc.uwaterloo.ca/
- Google's Python Class
  https://goo.gl/gkgEXY
- The New Boston
  https://goo.gl/qVLEn2
- Khan Academy Videos
  https://goo.gl/SQmnXQ
- Codecademy
  https://goo.gl/lU97i3

Additional Resources

- Visualizer
  cscircles.cemc.uwaterloo.ca/visualize
- Great challenges!
  www.pythonchallenge.com/
- More challenges (easier for beginners)
  projecteuler.net/
- Python Cheatsheet
  cscircles.cemc.uwaterloo.ca/cheatsheet/

URL of these resources on GitHub

https://goo.gl/1m7b2q

URL of my CS Circles Presentation

https://goo.gl/ZEeg1t

Questions?

pbeens@gmail.com

@pbeens