Python

Nathan Sprague
JMU Content Academy, 2014

Goals

- Python Crash Course

  – Break the ice if you've meant to learn Python but never had the chance.

- Python Turtle Graphics

- Resources for Teaching/Learning Python

Schedule

- Introductions (5 Minutes)

- About Python (5 Minutes)

- Python in the Terminal (15 Minutes)

- Python Programs (15 Minutes)

- Hands-On Turtle Exercises (30 Minutes)

- Resources / Discussion (20 Minutes)

Python

- History:

  - Originally released in '91 by Guido Van Rossum

  - Python 3.0 Released in 2008

    - 2.x $\rightarrow$ 3.x transition is still underway.   :(

- Use:

  - Frequently used as a scripting/glue language

  - Currently #8 in the TIOBE Language Index

Python For Education

- Attractive Features:

  – Minimal, easy-to-read syntax

  – Extensive standard libraries ("batteries included")

  – Dynamically typed

  – Interpreted

  – Cross-platform

  – Stylistically flexible – OO if you want it.

  – Free and open source

The Python Interpreter

- Let's take a look...

The Python Interpreter – Hands On

- Create a list containing three strings

  - Don't name it "list"!

- Create a list containing three numbers

- What happens when you access index -1?

- What happens when you "add" the two lists using the "+" operator?

- Try typing

      >>> help(list)

Python Files/Editors

- Python files have .py extension

- Any text editor will do

- Possibilities that might be appropriate for students:

  - IDLE (Cross-platform, included in the standard Python distribution)

  - Notepad++ (Windows only)

  - TextWrangler (Mac only)

  - Eclipse + PyDev Plugin

  - WingIDE (non-free)

  - DrPython

Python Turtle Exercise

- w3.cs.jmu.edu/spragunr/cta14/python/turtle.shtml

- Starter code: shapes.py

- Additional resources:

  - Official Python Tutorial:
    http://docs.python.org/2/tutorial/

  - One-Page Cheat Sheet

Additional Resources

- Python EDU-SIG: http://www.python.org/community/sigs/current/edu-sig/

  – Collection of links to free textbooks, tutorials, etc.

- Think Python: http://www.greenteapress.com/thinkpython/thinkpython.html

  – Free introductory CS textbook based on Python

- http://www.learnpython.org

  – Interactive web-based Python tutorial

- Code Academy: http://www.codecademy.com/tracks/python

  – Another web-based python tutorial

- Python Tutor: http://www.pythontutor.com/

  – Tool for visualizing Python code execution

- http://programarcadegames.com/

  – Textbook and exercises for writing games with pygame

Discussion

- Questions? Comments? Thoughts?

Drawbacks of Python

- 2.x $\rightarrow$ 3.x confusion

- Dynamic typing brings its own difficulties

- Slow

- Shortage of good development environments for beginners

- "Stylistic flexibility" can be a little ugly