
Discrete Mathematics

Python Programming

Bonnie Saunders

CTTI Workshop: UIC

May 18, 2013

These slides are available on my [homepage](#).

Why is Discrete Math Important

from David Patrick

The mathematics of modern computer science is built almost entirely on discrete math.

. . . with discrete mathematics, students will be thinking flexibly and creatively right out of the box. . . . there are a number of fundamental concepts to be mastered and applied in many different ways.

Installing Python 2.7.3

- ▶ If you have Windows, you can download and install the Python 2.7.3 package from www.python.org/download. Make sure you can run IDLE.
- ▶ If you use MAC OS X: (If you do not have OSX 10.5 or higher, other things may need to be done.)
 - ▶ Download and Install the appropriate Python 2.7.3 package from www.python.org/download
 - ▶ Choose the package appropriate for your OS X
 - ▶ In order for IDLE to run you should also install Active State Tcl 8.5.12. You can download it from the website www.activestate.com/activetcl/downloads.

More to Installing Python 2.7.3

In order to do modular arithmetic in Python, you will need to install a Python Package called cypari. Do this in two steps:

- ▶ Install Setuptools: go to pypi.python.org/pypi/setuptools follow the instructions appropriate for your situation.
- ▶ From a command line: type
`easy_install -f http://math.uic.edu/t3m/SnapPy-nest cypari`

Workshop 3: Python Programming

Workshop goals:

- ▶ Data Types: numbers, strings and lists
- ▶ loops and functions: Crack Caesar Cipher function
- ▶ Encrypt / Decrypt Programs
 - ▶ Additive
 - ▶ Multiplicative
 - ▶ Affine
 - ▶ Vigenère
- ▶ Reading Python and the art of open software
- ▶ CCSS Mathematical Practice Standard #7:
Look for and make use of structure.

Other Resources

cryptoclub.org This website is new and under construction so please be patient. To join a group, Click: Challenges. See the Join-a-Group link under My Group Messages. There are two groups of interest:

This group has a message board that has many of the messages in the Cipher Handbook

- ▶ GROUP ID 140
- ▶ PASSWORD cryptography

This group was made for CTTI teachers. You can post your own messages here.

- ▶ GROUP ID 143
- ▶ PASSWORD ctticrypto

Other Resources: Python

Think Python by Allen Downey A downloadable book for learning Python. Very nicely written and I'm told has been used with High School students.

Google's Python Class This is a free online class for people with a little bit of programming experience who want to learn Python. This might be more for developers but is worth a try.

Python for Kids A kids guide to Python programming. Looks fun.

THE YOUNG CODER: LET'S LEARN PYTHON A tutorial for learning Python.