

COMP 150 Introduction to Computing

Introductory Lecture

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Data, Data Everywhere



WHAT WOULD YOU DO WITH ALL THIS DATA?

The illustration shows a white, featureless human figure holding a large red umbrella. The figure is standing in a 'rain' of various data-related terms and icons. The terms include 'Medical Records', 'Words Searched', 'Uploaded', 'Satellite Images', 'Pictures', 'Internet Songs Downloaded', 'Accounts', 'Website', 'Driving Records', 'Tweets', 'Facebook', 'Emails', 'Texts', 'Phones Watched', 'Addresses', 'Temperature Changes', 'Computers Used', 'Hard Purchases', 'Views', and 'Messages'. A QR code is located near the figure's feet.

Mathematics and statistics provide the tools to understand ever-increasing amounts of data. To learn more, visit the Mathematics Awareness Month website and enter for a chance to win an iTunes gift card at www.mathaware.org.

Mathematics, Statistics, and the Data Deluge

MATHEMATICS AWARENESS MONTH

Sponsored by the Joint Policy Board for Mathematics—American Mathematical Society, American Statistical Association, Mathematical Association of America, Society for Industrial and Applied Mathematics

Computer Science Skills Needed Across Disciplines



“Computing may be the fourth great domain of science along with the physical, life and social sciences”

-Peter Denning

<http://www.americanscientist.org/libraries/documents/20108101750328103-2010-09Denning-ComputingScience.pdf>

Algorithm:

- Unambiguous, step by step instructions for how to accomplish a particular task in a finite amount of time

What we'll focus on in COMP 150

Programming in Python

- Python is a simple, yet powerful, language to learn and understand (close to English)
- Even beginners can write programs to simplify their own personal tasks

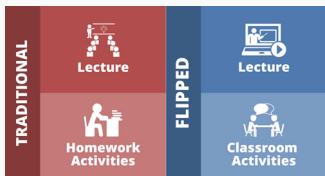
Applications

- Graphics
- Data visualization

What's going on underneath Python

- Machine language and assembler code
- Computer hardware

Flipped Class Format



- Coming to class prepared (assigned reading and videos) is **CRUCIAL**
- Most days I will talk for only 5-10 minutes
- Rest of class time will be yours to work on assigned exercises and ask questions

Programming Can Be Frustrating for Everyone



Pair Programming

A method of programming in which two people work together at one keyboard

- One person, the “driver”, types at the keyboard
- The other person, the “observer” or “navigator”, reviews each line of code as it is typed, checking for errors and thinking about the overall design
- Switch roles often – at least every half hour



Pair Programming

Some benefits you can expect:

- better code (simpler design, fewer bugs)
- shared knowledge throughout your team
- better time management, higher productivity
- higher morale (more fun!)



The syllabus and assignments are posted on the class website

- You can reach the site through the course Sakai page or at this link:
- <http://hwheeler01.github.io/comp150/>

Pair Programming

First:

- Get to know each other with People BINGO
 - Fabulous prizes available

Then:

- Choose your own partner OR
- If you'd rather leave it up to chance, we will use a Python script to randomly assign you a partner

Get Python Running

- If using your own computer: [Download Python](#) (Tutorial [1.1.3](#))
- [Download example files](#)
- Run madlib.py (Tutorial [1.2.2](#))
- Open madlib.py in IDLE and run it within IDLE
- Get help if things aren't working