CompSci 101
Data into Information and Knowledge

Computer Science
Prerequisites for Compsci 101
Announcements

• See assigned reading on course web page
  – Reading Quiz 1 (RQ1) online on Sakai (out today)
  – due by 1:25pm Thurs, Aug 31.

• Labs start this week! Aug 30-31! (Wed/Thur)

• Assignment 1 out today! Due Sept 5!

• Try out course software - VM
  – Try to run it before going to lab
  – If you get frustrated, get help or wait til go to lab!

• Today: Introduce Computer Science
What is Computer Science?

Just ask Siri (or Bing?)

https://www.bing.com/search?q=what+is+computer+science&qs=HS&sc=8-0&cvid=C80E71D615F5404298E579A938ACC80E71D615F5404298E579A938ACC80E71D615F5404298E579A938A CCA3F&FORM=QBLH&sp=1
Ask Google - Anatomy of a search query

https://www.google.com/search?q=what+is+computer+science&ie=utf-8&oe=utf-8

What are the parameters to the query?

➢ What changes, what stays the same?
Images for Computer Science
What is Computer Science?

- Artificial Intelligence

Roomba

Spirit, Mars Rover

Self-driving car

Personal Robot
What is Computer Science?

- Medicine, Genomics
What is Computer Science?

- Animation
Who are all these people?
bit.ly/101f17-0829-2
Questions about Computer Science

What is it that distinguishes it from the separate subjects with which it is related? What is the linking thread which gathers these disparate branches into a single discipline? My answer to these questions is simple --- it is the art of programming a computer. It is the art of designing efficient and elegant methods of getting a computer to solve problems, theoretical or practical, small or large, simple or complex.

C.A.R. (Tony) Hoare

compsci 101 fall 2017
How will you learn to 'speak'?

- http://www.rosettastone.com/personal/demo
- http://duolingo.com
How will you learn to program?

• You learn more than programming
• Coding, Algorithms
  – UX/UI: User Experience, User Interface
  – Data Analytics, Software Engineering

• A course, a way of thinking, a set of skills and practice that can lead to more or …
What language will we learn?

- [http://www.python.org/](http://www.python.org/)
- Python is a *multi-paradigm* language
  - Procedural
  - Functional
  - Object-Oriented
- Simple, libraries, widely used
- Guido von Rossom is BDFL
Who are you?

• Let’s look at survey to see who is taking Compsci 101 in Spring 2017
  – Do you recognize yourself?
  – Is there a stereotypical Compsci 101 student?
  – Is there a stereotypical computer scientist?

• Everyone can succeed! Ideally you won’t have lots of experience programming
Course Overview:
Is this the right one?

• Work by yourself and collaboratively on solving problems that programming
  – Analyze the problems, think about solving them
  – Create, Collaborate, Persist, Problem-Solve

• Why should you come to class?
  – Learn things, participate in a community
  – Provide help, get help, wonder, dance, think

• Why is this course so great?
  – Because you're in it
What's in Compsci 101?

• Learning about computing, computer science, and programming
  – Vocabulary of Python and programming
  – *Power of automation, repetition, scale*
  – Understanding and changing the world

• Programming using Python
  – Tools: Eclipse, EPD, Libraries, …
  – Using mathematical and scientific techniques
  – Art *and* science of programming
Course overview, logistics

www.cs.duke.edu/courses/fall17/compsci101

• Programming assignments: APTs and Assignments
  – Acknowledge assistance, to learn to program …
  – Be aware of late policy
• Exams: midterms and final: paper-based, different
  – All old midterms available
• Class work/attendance
  – Examples today, benefits hopefully clear
• "Hello World"
• Scratch Program
• Colors
  – Duke blue: motion
  – Mustard: control
  – Light blue: sensing
  – Orange: data
  – Purple: looks
Analyze this Scratch Program?

Python code

hello.py

```python
... Created on Aug 28, 2017
@author: Susan
...
print "hello CompSci 101 students!"
```

<terminated> hello.py [C:\Users\Susan\AppData\Local\Enthought]

hello CompSci 101 students!
Python data reading code

```python
f = open("kjv10.txt")
st = f.read()
total = len(st)
zc = st.count('z')
print "total # chars = ", total
print "number of z's", zc
for ch in 'aeiou':
    print ch, st.count(ch)
```