CompSci 101
Introduction to Computer Science

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

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Prof. Rodger

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=C80E71D615F5404298E579A938A 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

- Medicine, Genomics
  - Personal Robot
  - Personal Robot

- Animation
  - Animation
  - 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

How will you learn to 'speak'?

- [http://www.rosettastone.com/personal/demo](http://www.rosettastone.com/personal/demo)
- [http://duolingo.com](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 Rossum 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

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- 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

```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)
```