Yesenia Velasco

- Teaching Associate
- Right-hand woman - Handles logistics, substitute lectures, and much more!
- Handles accommodations
  - Email her your accommodation letter
  - yvelasco@cs.duke.edu

A is for …

- **Algorithm**
  - Step-by-step instructions realized in a program
- **Abstraction**
  - Hiding things is powerful
  - “What” vs “How”
- **APT**
  - Algorithmic Problem-solving Testing
- **API**
  - Application Programming Interface - using Libraries
Announcements

• Check out the calendar on the course website
• PRE-WORK – what you must do before the lecture
• LECT/LAB – will put notes/videos here from the live lecture or for the lab
• DUE – what is due each week.

• What has been updated?

• Assignment 1 is already out!
• You will see a link to this video!

Prerequisites for CompSci 101

Who has taken CompSci 101?
Vacuum Tubes

- Control electric current using the vacuum
- Can be used to start/stop, or change the flow based on the current
  - Off/On → 0/1
  - 00000011

The Original Computers
Apple I and II

Where the Magic Happens: Computer Science

Artificial Intelligence

Medicine, Genomics
What is Computer Science?

- Definition 1:
  - "The study of computers and computational systems."
- Definition 2:
  - "The study of computers and computing, including their theoretical and algorithmic foundations, hardware and software, and their uses for processing information."
- Definition 3:
  - "The study of how computers can be used to solve a wide range of problems."

How We Communicate with Computers

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

Comp Sci 101
Introduction to Computer Science
Part 3 of 3

[www.cs.duke.edu/courses/spring21/compsci101](http://www.cs.duke.edu/courses/spring21/compsci101)

Nicki Washington
Susan Rodger
January 21, 2021
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

Course Overview: The Right Course?

- 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: PyCharm, Libraries, ...
  - Using mathematical and scientific techniques
  - Art *and* science of programming
Course overview, logistics
www.cs.duke.edu/courses/spring21/compsci101

• Programming assignments: APTs and Assignments
  • Acknowledge assistance, to learn to program …
  • Be aware of late policy
• Exams: 3 exams and a final exam
  • All old exams are available, but no final exams
• Classwork/attendance
  • Attend the live lecture - participate
  • If you can't attend you must watch it and participate within 24 hours

Python code
hello.py

```python
def print_hello(name):
    print(f'Hello, {name}!')

if __name__ == '__main__':
    print_hello('CompSci 101 students')
```

Duke Connection: Fred Brooks '53

• Turing award winner
  • Developing IBM 360 computers
  • Software engineering
• What Would FB Say?
  "The most important single decision I ever made was to change the IBM 360 series from a 6-bit byte to an 8-bit byte, thereby enabling the use of lowercase letters. That change propagated everywhere."

Why is programming fun?

Fred Brooks

• First is the sheer joy of making things
• Second is the pleasure of making things that are useful
• Third is the fascination of fashioning complex puzzle-like objects of interlocking moving parts
• Fourth is the joy of always learning
• Finally, there is the delight of working in such a tractable medium. The programmer, like the poet, works only slightly removed from pure thought-stuff."