CompSci 101
Introduction

Susan Rodger
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Every lecture: DO NOT SIT IN THE LAST 5 FULL ROWS or the small 2 seater row at the top!

Prof. Yesenia Velasco

- Handles logistics, substitute lectures, and much more!
- Will teach some lectures, teaching this course next semester
- Handles accommodations
- Email her your accommodation letter
  - yvelasco@cs.duke.edu

Learn the CS Alphabet
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

Feature someone related to CS in every lecture

**Fred Brooks – Technical Leader of IBM's 360 computer project**

• 1964 – 360 was a family of six compatible computers
Fred Brooks '53

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."

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.

Why is programming fun?

Fred Brooks

Go over CompSci 101 webpages

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 0 is already out!
Lab 0 on Friday
Prelab for Lab1 (install Python)
You will see a link to this video!
Course overview, logistics

www.cs.duke.edu/courses/spring23/compsci101

• Programming assignments: APTs and Assignments
  • Acknowledge assistance, to learn to program …
  • Be aware of late policy
• Labs
  • Attend each Friday
• Lecture - Classwork
  • Attend the live lecture - participate
  • If you can’t attend you must watch it and participate within 24 hours
• Exams: 3 exams and final
  • All old exams available

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

Questions?

• Don’t send us email!!!!!!!!!!!!
• Post your questions on Ed Discussion
  • We will answer them there!
  • You should try to answer them too
    • Want to be a UTA one day? Answer questions!
• Post Questions during lecture!

WOTO – Working Together

Discuss with others, then everyone fills out their own form.

What is Computer Science?
Computers speak in 0’s and 1’s

- In old computers
  - Control electric current using the vacuum

- Nowadays, use switches
  - A switch that is "on" or "closed" represents 1
    - Passes electrical current through
  - A switch that is "off" or "open" represents 0
    - Blocks electrical current
  - Express 0’s and 1’s, called bits
  - 8 bits are a byte and represent a symbol

- What letter is 01000001 ?

What is Computer Science now?

- Artificial Intelligence
  - Perseverence Mars Rover
  - Self-driving car
  - Personal Robot

A
What is Computer Science?

• Medicine, Genomics

What is Computer Science?

• Animation

What is Computer Science?

• The Organization of Data, Sharing, and Searching

Prerequisites for Compsci 101
Who has taken CompSci 101?

Who are you?

- Let’s look at survey to see who is taking CompSci 101 in Spring 2023
  - 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

What does this program do?

- "Hello World"
- Scratch Program
- Colors
  - Duke blue: motion
  - Mustard: control
  - Light blue: sensing
  - Orange: data
  - Purple: looks

WOTO: WOrking TOgether


Analyze this
Scratch Program?
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

Python code

```python
if __name__ == '__main__':
    print("Hello CompSci 101!")
```

OUTPUT:

Python Code, second program

```python
def greeting(name):
    print("Hello " + name)

if __name__ == '__main__':
    greeting("CompSci 101!")
    greeting(" Beenie, Keeah and Moe")
```

OUTPUT: