CSCI-UA-0002

Intro to Computer Programming (No Prior Experience)

Introduction: What is Programming?

Professor Emily Zhao

Section 008
T/R 12:30-1:45PM

Section 012
T/R 4:55-6:10PM

This course is designed to be a “gentle introduction” to the fundamentals of **computer programming**, which is the foundation of Computer Science. Students will design, write and debug computer programs. No knowledge of programming is assumed.

→ **What is programming?**

Agenda

- Introductions
- Course walk-through
- ***What is Programming?***
- Classroom Agreements
- **Activity: *The Language of Being Specific***

Emily Zhao
(she/her)

Background

- BFA in Film + Television Production
- MPS in Interactive Telecommunications (aka Art + Tech)

Where I've Taught:

- Scholastic, GirlsWhoCode, Tisch ITP/IMA
- CAS Computer Science
  - Intro to Programming, Intro to Web

My Work

- Text and storytelling in the browser
- Games + other interactive experiences

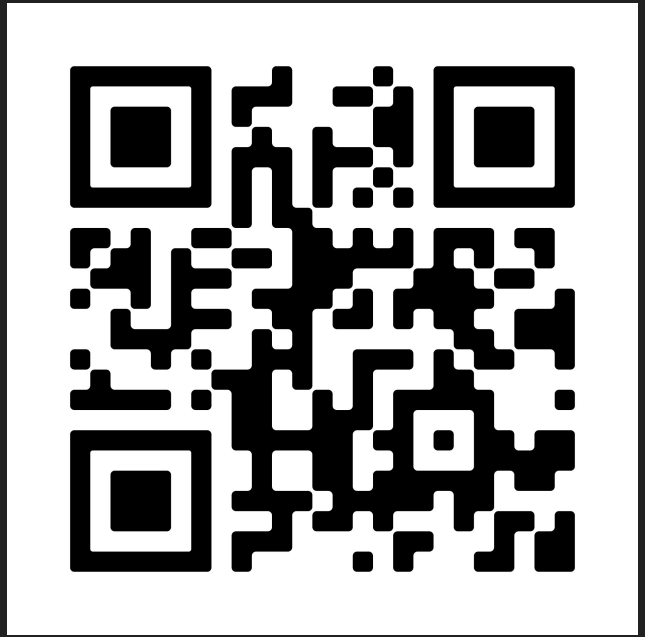
Code has so many different applications!

Let’s get to know you!

pollev.com/emilyzhao

Class Website

http://bit.ly/python-with-emily



How class works:

Asynchronous (before lecture)
- Self-paced learning module
- Quiz (Brightspace)
- Ask a question (Ed)

Lecture
- Review module (questions, quiz, material)
- Practice problems

Programming Workshop
- Assignments (review previous, begin next)
- Peer programming
- TA help, 1:1 meetings

What is programming?

What is programming?

— Instruction for the computer to perform certain tasks

Draw a rectangle.

Draw a rectangle.

— A human will do it with uncertainty.
— A computer will refuse.

Code as a language

> Cognitive scientists have debated whether your native language shapes how you think since the 1940s. The idea has seen a revival in recent decades, as a growing number of studies suggested that language can prompt speakers to pay attention to certain features of the world. **Russian speakers are faster to distinguish shades of blue than English speakers**, for example. And **Japanese speakers tend to group objects by material rather than shape**, whereas **Koreans focus on how tightly objects fit together**. Still, skeptics argue that such results are laboratory artifacts, or at best reflect cultural differences between speakers that are unrelated to language.
>
> – *Speaking a second language may change how you see the world.* (Science)

Does learning a language change the way you view the world?

Code as a language

→ What makes a good language?

Code as a language

→ The language of being **specific**
→ The language of **abstraction**

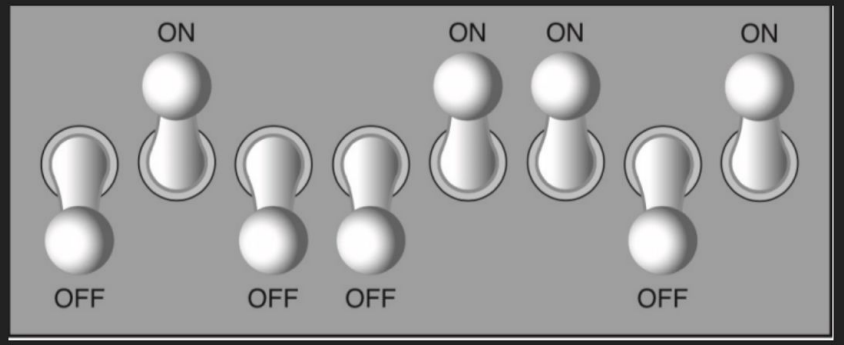
What IS a rectangle?
How do we break down a rectangle?
What is it made out of? (i.e. width, length, shape, color, line weight, etc...)

How should we instruct how to draw one? (what language? where? what material? who? when? etc...)
How do we break down the steps?
Where do we start and end?

Computers aren’t smart.

It’s all ones and zeros

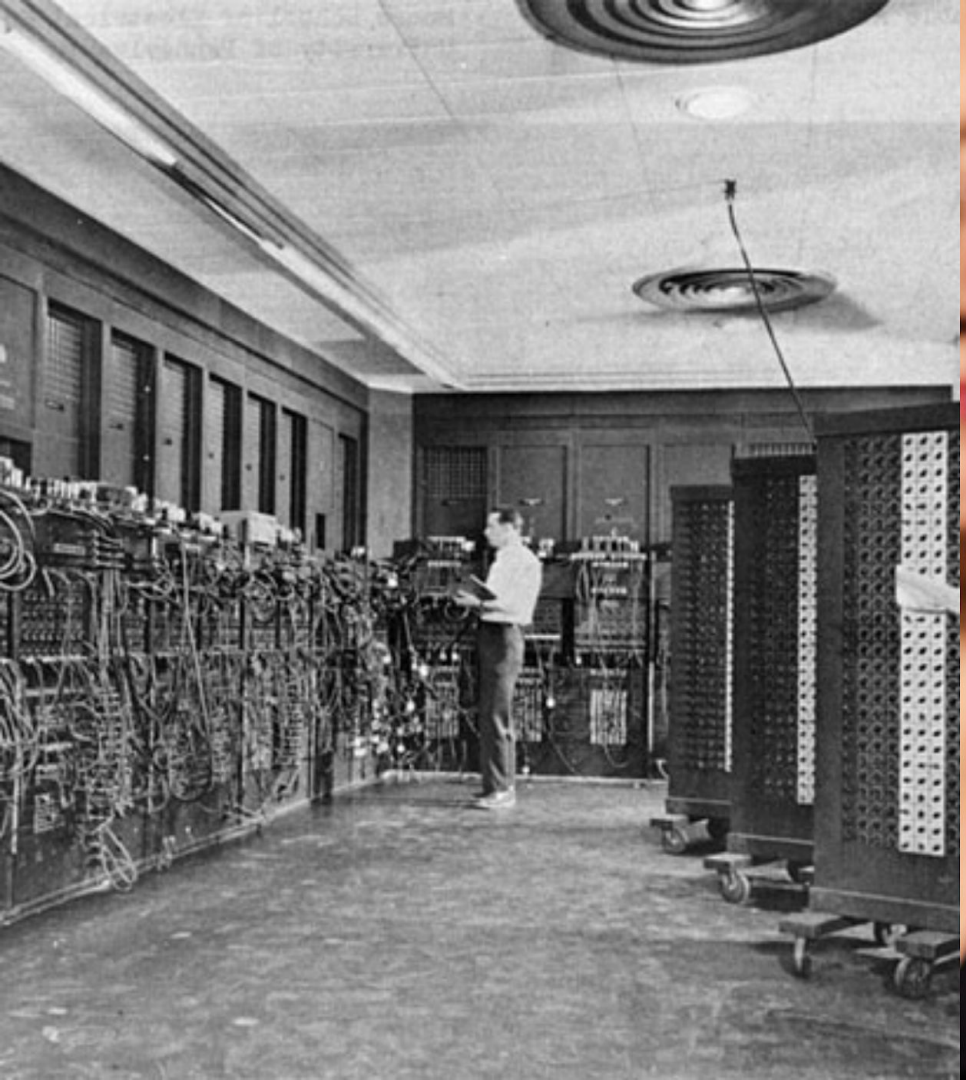
- Binary language: "0" and "1" (which really correspond to electrical impulses +5v / -5v)
- Bit: 1 | Byte: 01001011
- 1 byte has the possibility of 256 unique "states"

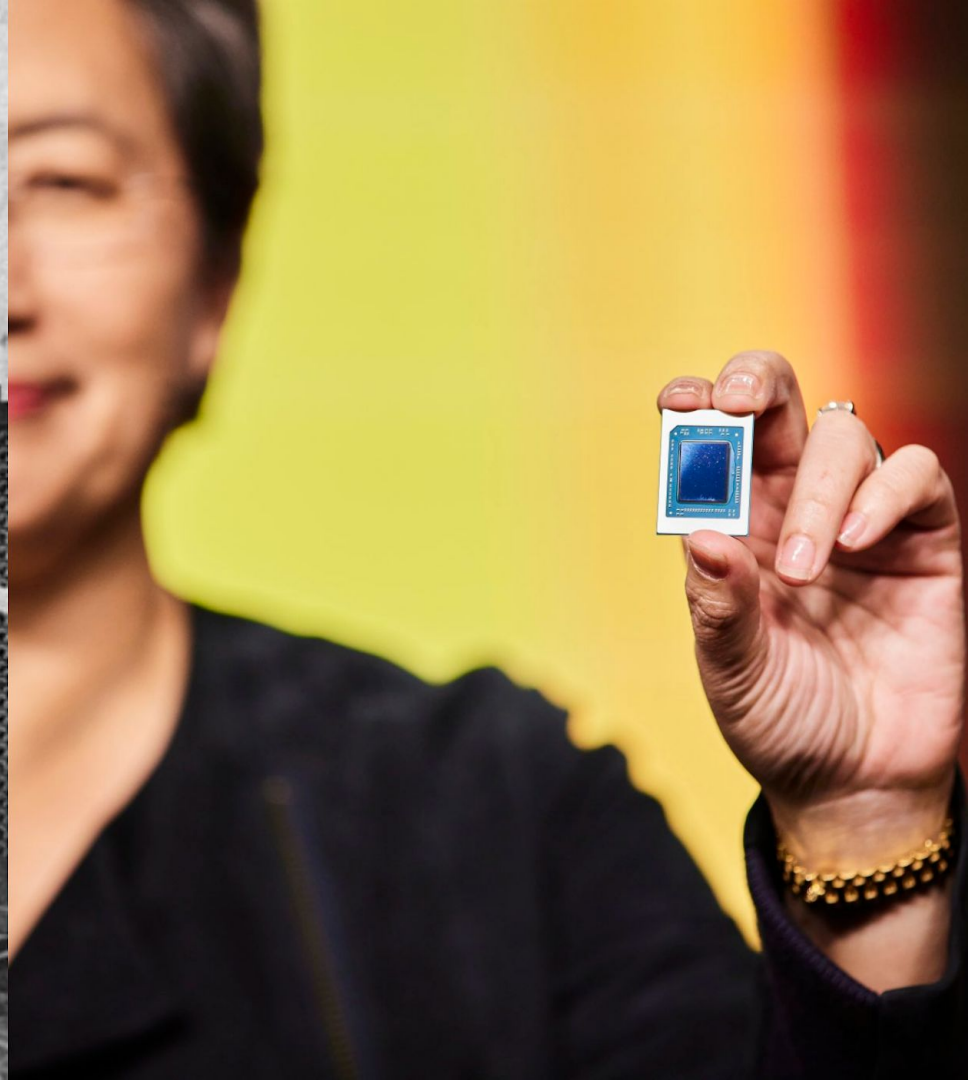


Punch Card in Punch Card Machine

Computers aren’t smart.

They’re just really really really really really fast (now)!





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Classroom Agreements

What does a teacher in this classroom look like?

What does a student in this classroom look like?

What are our agreed upon expectations?

My expectations

Engagement

- Listening to me when I speak without interruption
- Effort (not perfection) in assignments and participation
- Just showing up

Communication

- If you need anything, please ask:
- You can ask me after class
- You can send me an email
- You can book an office hour
- Secret hand signal
- Just talk to me, I promise I will listen

Activity: *The Language of Being Specific*

On the class website, under the schedule tab, there should be a link to a Random Sketch under the materials column.

With the person(s) sitting beside you:

1. Change the random seed to a number of your choice
2. Write up a description (in English) of the sketch. The goal is to get me (your mock computer) to recreate the sketch as accurately as possible.
3. Be **SPECIFIC**! You have 10 minutes.

Python

- This semester we will be working with Python
- Used extensively as both a teaching language and a production language
- IDLE: Integrated Development Environment

For next time

- Peruse the class website, common syllabus, and Brightspace
- Begin "Self-Paced Learning Module #1", take the quiz, and ask a question on Ed