Welcome to CSCI-UA 101
Hi, I’m Brett.

- Adjunct Professor, Courant Institute of Mathematical Sciences
Schedule

• Introductions
• Syllabus
• Expectations
• Let’s get this started
• hw assignment
Introductions

• Preferred name

• Programming experience - languages, etc

• Programming interests?

• CS major or minor
A bit about me

• Adjunct Professor, Courant Institute of Mathematical Sciences

• Senior Developer of Interactive Exhibits, American Museum of Natural History
Syllabus

• Let’s check out the website!
Expectations of you

• Come to class!
  • (I know it’s super early)
  • The class will get hard
  • You can ask questions, get help, the book will make more sense

• Participate!
  • It’ll be fun, promise
  • You’ll stay awake
  • It might help your grade…
Expectations of me

• Come to class!
  • (prepared)

• Write clear homework assignments

• Give prompt feedback

• Be responsive to emails, etc

• Hold office hours
Let’s get started
This class is about programming
• Learning to program is learning to tell a computer what to do
So what is a computer?

- Electronic device to store and process data
- Hardware
  - Central Processing Unit (CPU)
  - Memory
  - Storage devices
  - Input/output devices
  - Comm devices
- Software
CPU

- Computer’s brain
- 2 parts:
  - Control unit
  - Arithmetic/logic unit
- Made of transistors
Storing data

- 1’s and 0’s
- bits
- byte = 8 bits
<table>
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Memory

• Computer’s work area

• every byte in memory has a unique address

• RAM = random-access memory

• important when writing programs!
Talking to the machine

- High-level languages
- Assembly language
- Machine code
- Electronic circuitry
Machine code

- Instructions in binary

- like this:
  1 1 0 1 1 0 1 0 1 0 0 1 1 0 1 0
Start:

sei
clid
lda #%00010000 ;init PPU control register 1
sta PPU_CTRL_REG1
ldx #$ff ;reset stack pointer
txs

VBlank1: lda PPU_STATUS ;wait two frames
bpl VBlank1

VBlank2: lda PPU_STATUS
bpl VBlank2

ldy #$ColdBootOffset ;load default cold boot pointer
High-level language

- Platform-independent
- English-like, easier to learn and use
- You write source code, translated using an interpreter or compiler
Java

- Designed in 1991 for embedded systems, called oak
- Renamed Java in 95, redesigned for web apps
- Super popular
• Server technology, websites, desktop apps, mobile apps (Android), interactive installations (Processing), control MARS ROVERS, etc.…
Some definitions

• **Java language specification** - syntax and semantics

• **Application program interface (API)** - library, predefined classes and interfaces. [https://docs.oracle.com/javase/8/docs/api/index.html](https://docs.oracle.com/javase/8/docs/api/index.html)

• **Java Standard Edition (Java SE)** - We’ll use this one. For client-side applications

• **Java Enterprise Edition (Java EE)** - server-side apps (servlets), etc

• **Java Micro Edition (Java ME)** - mobile devices like old cellphones
How to program in java

• Make sure it’s installed!

• Use a text editor to write java program, then compile, then run.

• OR use an IDE (Integrated development environment)
public class Welcome {
    public static void main(String[] args) {
        // Displays message to console
        System.out.println("Hello World!");
    }
}
Homework

• Read chapters 1 & 2
• Install JDK and Eclipse
• Assignment #00