CS 161
Intro to CS I

What is programming?
Chap. 1
Odds and Ends

• Class Website (not Canvas)
  – Labs and assignments are posted
  – Lab/recitation times, office and grading hours, and TA/instructor information
  – Slides and course videos

• Syllabus (class and recitation)
  – Grade weights, details, dishonesty, etc.
  – Be Proactive!!!
  – Establishing a Positive Community (meet your peers!)

• Assignment #1 posted, due Sunday 11:59pm submit on TEACH

• Recitation Quiz #1 posted, due Monday 11:59pm (email to TA)
Computers Are Everywhere

• Examples:
  – homes, offices, rooms/servers, phones, pacemakers, cars, etc.

• What is the difference b/w these?
  – Complexity
  – Size
What is a computer?

• A Computational Device
  – It computes (input-> processing -> output)
  – Modern: device that can be programmed to carry out an algorithm.

• Computer Science
  – The study of devices that can be programmed
What is an algorithm?

• Step-by-step description of how to accomplish a task, i.e. recipe
• Algorithmic thinking
• Expressed in any language
  – Natural
  – Programming
What is programming?

- Problem Statement
- Solve the Problem
- Specify Algorithm
- Algorithm -> Computer Language

- Why do we teach programming 1^{st}?
Hardware vs. Software

• Computer: **machine** that manipulates data and carries out **set of instructions**

• Hardware
  – CPU
  – RAM
  – Hard Disk

• Software
  – Programs
Software/Programs

• Primary piece of software on computer?
• What is its purpose?
• What are applications?
Digital Realm

• Based on discrete #s
  – Specifically: Circuits
• Binary, i.e. base 2
  – 0 or 1
• What base do most people use?
  – What is the range for each digit?
• What is Hexadecimal?, i.e. base 16
  – What is the range for each digit?
Decimal, Binary, & Hex

• Decimal
  – Powers of 10

• Binary
  – Powers of 2

• Base X to Base 10 conversion
  – 32 (base 10): $3\times10^1 + 2\times10^0 = 32$ (base 10)
  – 100000 (base 2): $1\times2^5 + 0\times2^4 + 0\times2^3 + 0\times2^2 + 0\times2^1 + 0\times2^0 = 32$ (base 10)
  – How do we express 35 (base 10)
    • base 2
    • base 16
Quick Demo...
Quick Demo...
Quick Demo...
Reading/Assignments

• Read/Start Assignment 1 and Recitation Quiz
• Read Chap. 1 of online books!!!
• Recitations, Labs, and Office Hours are happening this week.
• Laptop required for Lab.
• Assignments must compile and run on ENGR!
• Demos start next week (no laptop required).
• Sign-up for demo on home page, after you submit your assignment.
• Don’t be scared!!!!