CS 101 — Lesson Zero

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Objectives

Your Objectives:
- Understand how to turn in a lesson.
- Know what to do if you get COVID, or go on an interview.
- Explain computational thinking
- Explain abstraction
Lessons

- Each lecture will review the concepts on one lesson.
- Lessons are released weekly before the weekend. (Probably Friday)
- You don’t turn in the lesson; it auto-turns-in at the due date. (Why?)
Absences

Common problems...
- What if I get COVID?
- What if I go on an interview?
- What if I go on an interview, and get COVID while doing it?

What to do
- Lessons and homework are meant to be done remotely
- Plenty of time to turn them in... **if you don’t wait until the last minute.**
- “Sick day” model — we allow you to drop a few homeworks and lessons.
- Email cs101admin@cs.illinois.edu to arrange a make-up lab. You have one week.
What is this — part one:
Abstraction

- We have a phenomenon of interest.
- We identify the parts that concern us.
- We model it using the abilities of the computer.
  - Example 1 — The Integers
  - Example 2 — Floating Point
Example 3 — What is this?

\[ \text{hyp(mod(rand(gcd(5,2),8),7),8)} = 8.0903676934 \]
Example 3 — What is this?

```
hyp(mod(rand(gcd(5,2),8),7),8) = 8.0903676934
```
Marr’s Levels

The lesson gave you three levels of comments:

1. Computational theory: What is the goal of the computation, why is it appropriate, and what is the logic of the strategy by which it can be carried out?
2. Representation and algorithm: How can this computational theory be implemented? In particular, what is the representation for the input and output, and what is the algorithm for the transformation?
3. Hardware implementation: How can the representation and algorithm be realized physically?
Thinking Computationally

▶ You saw infinite series in the lesson.
▶ Find the value of \( \sum_i \frac{1}{n^2i} \) accurate to three places.
▶ In groups, *without writing a program*, come up with a way to explain how to do this.
Next Time....

- Lab Sections will start next week.
- We had to cancel three of them due to low enrollment.
- New lessons will drop on Friday. Monday class will discuss lesson 1 topics.