Slide 1

## Administrivia

- Review sheet for final on Web. Also sample solutions for quizzes and all homeworks (soon).
- Due dates for all homeworks have passed, but I will accept late work for partial credit through next Friday.
- Should we have a review session?

Slide 2

## Quotes of the Day/Week/?

- From a key figure in the early days of computing:

  "As soon as we started programming, we found to our surprise that it wasn't as easy to get programs right as we had thought. Debugging had to be discovered. I can remember the exact instant when I realized that a large part of my life from then on was going to be spent finding mistakes in my own programs." (Maurice Wilkes: 1948)
- From someone in a discussion group for the Java programming language:

  "Compilers aren't friendly to anybody. They are heartless nitpickers that enjoy telling you about all your mistakes. The best one can do is to satisfy their pedantry to keep them quiet :)"

**Slide 3**

## Course Recap

- Recall from first class — course is an "introduction to programming."
- Ideally, a first course would focus more on ideas of programming than details — except that, in the words of a colleague

  "Programming is not a spectator sport."

  so we have to choose a programming language, and an environment, and then it's difficult *not* to get caught up in the details.

**Slide 4**

## Course Recap, Continued

- Course was originally designed to meet the needs of two audiences:
  - Prospective CS majors/minors.
  - Majors in other fields where programming is a useful skill (math, engineering, sciences).

  More recently, course was added to common curriculum.
- Meeting the needs of all these diverse groups — may not even be possible, at best one must compromise.

Slide 5

## Course Recap, Continued

- Many possible choices for a first programming language/environment.
- In this course, we use simple tools because we think this works best for our original target audience — helps you understand what's going on, at a fairly low level. This year we have switched from C (a fairly low-level language) to something higher-level (Scala in most sections, Python in some).
- Once you know *one* programming language, the next one is easier, and the next one easier still. (Caveat: "Easier" is relative to how similar language is to one you already know. Programming languages come in groups — procedural, functional, object-oriented, etc.)

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## What I Hope You Got From This Course

- A basic understanding of what programming is — expressing a problem and its solution as "an algorithm" and turning that into code.
- A good enough foundation in *some* programming language to let you write programs using whatever tools/environment are appropriate to your field.
- If you never write another program — now you know what "source code" is, and you've done something most people don't have any idea how to do, and you've done it using tools that are not especially novice-friendly!
- (If you found this course difficult — many people do! Subject is not easy, and a lot of material to cover.)
- (Look briefly at an example of code that does something more complicated / interesting?)

**Slide 7**

## Minute Essay

- How did the course compare to your expectations/goals? Did you learn what you hoped to learn?