

Slide 1

Administrivia

- Homework 4 graded and grades sent.
- Midterm graded. Scores generally good, though several not.
- Grade summaries sent by e-mail. They don't include Homework 5 but should give you some idea where you stand in the course. I'll probably send an update after grading Homework 5.
- Reminder: Homework 6 due Monday.

Slide 2

Minute Essay From Last Lecture

- Everyone had seen arrays in Matlab. (So the concept is not new, just how it plays out in C.)
- (No uses really stood out.)

Arrays — Review/Recap

Slide 3

- Arrays give you a way to do something akin to subscripted variables in math: You reserve space for a group of values of a particular type, giving a name, and then reference particular values with that name and an *index* (like a math subscript).
- Valid indices range from 0 to one less than the array size. Alas, in C it's all too easy to use an index not in that range, and results are — unpredictable. (Your program might crash, or it might overwrite some other variable.) (Worth noting that more-modern programming languages have safety checks to prevent this. C doesn't do that, for reasons its adherents think good.)
- (As one more example, we could write the program mentioned last time, the one that counts how many of each character in input.)

Floating-Point Revisited

Slide 4

- One of the exam questions asked you about representing 0.1 in (binary) floating point. Only one person got it right. Why is the answer “can't be done exactly”?
- Well ...

Numbers in Math Versus Numbers in Programming (Review)

Slide 5

- The integers and real numbers of the idealized world of math have some properties not completely shared by their computer representations.
- Math integers can be any size; computer integers can't.
- Math real numbers can be any size and precision; floating-point numbers can't. Also, some quantities that can be represented easily in decimal can't be represented in binary.
- Math operations on integers and reals have properties such as associativity that don't necessarily hold for the computer representations. (Yes, really!)
- (Two "floating point is strange" example programs.)

Minute Essay

Slide 6

- How did the midterm compare to your expectations (topics, level of difficulty, ...)?