

Slide 1

Administrivia

- Reminder: Homework 4 due today.
- Reminder: Midterm next Tuesday. Review next time. Sample solutions for homework will be online soon, plus a short review sheet about the exam.

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Minute Essay From Last Lecture

- (Question was about possible uses for arrays and lists.)
- "Full balance sheet" for a company.
- Customer databases.
- Inventories of any kind.
- Improved version of checkbook program.
- Inputs/outputs to program (for testing). (Maybe! Or maybe this would be a use for I/O redirection?)

Arrays and Lists — Overview

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- With what we've done so far we have enough tools to compute anything we want to compute.
- However, some things are awkward (repetition), and we don't yet have a convenient way to store many values — something similar to subscripted values in math.
- Most programming languages give you a way to represent *collections*. Exactly what you get depends on the language — e.g., C gives you only something quite primitive (but close to what the hardware can do), Java gives you something more abstract/useful, and Scala goes even further.

Arrays and Lists in Scala

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- Scala provides two ways of representing a “sequence” (ordered list of elements), `Arrays` and `Lists`. From the outside they look very similar, but behave fairly differently:
An `Array` has a fixed number of elements, but the values of the elements can be changed.
A `List` cannot be changed at all, but there are easy and efficient ways to build lists.
- Both are “parameterized types”, which means you can specify the type of the elements.

Arrays in Scala

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- Two syntaxes for creating an Array. Examples:

```
// four elements, initial values as given
val a1 = Array(1,2,3,4)
// ten elements, all zero
val a2 = new Array[Int](10)
```

- Syntax for referencing element uses name of array plus index in parentheses. Indexes range from 0 through length minus 1. Examples:

```
println(a1(1))
a2(2) = 20
```

Arrays in Scala, Continued

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- Length of Array can be obtained with `.length` or `.size`.
- That gives us enough to write some simple functions using recursion ...

Minute Essay

- None — quiz.

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