

From Interfaces to Iterators

- We want to look at all the elements in an ArrayList
- We want to look at all the genomic sequences in a FASTA file
- We want to read all the words in a file
- We want to read all the lines in a file

- *We want to iterate over a collection, obtaining the elements one at a time for processing*
 - If we can develop a generic methodology for doing this, we can develop code without knowing the source of the data, just knowing there's a standard way to access data

java.util.iterator

- See code in `IteratorMagic.java`
 - How do we get an iterator?
 - Ask an object for one
 - What does the `next ()` method return?
 - An object, how do we actually use the object?
 - What can we iterate over?
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- What about specialized iterators
 - `Scanner` has `nextString ()`
 - `SequenceIterator` has `nextSequence ()`

Iterating over lists and sets

- **What's difference between ArrayList and Set?**
 - What does set store? ArrayList store?
 - How do we add elements to each?
- **What about underneath the hood**
 - What is behavior and state of ArrayList?
 - What is behavior and state of TreeSet?
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- **How do we use libraries? Classpath?**
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David Gries

- Advocates formal methods as integral part of program development
 - Formal means well-founded mathematically
 - Plays pingpong with ripped pants

A programmer needs a bag of tricks, a collection of methods for attacking a problem. ... One technique will never suffice

- Has developed a CD-based book for learning Java with his son (uses singing!)

