CS203 Programming with Data Structures
Java Collections

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Java Collections

- http://java.sun.com/j2se/1.5.0/docs/api/java/util/package-summary.html
- Exercise: read the documentation for `Collection`, `Iterator`, `List`, `Map`, `Queue`, `Set`, `SortedMap`, and `SortedSet`

List, Set, and Map

- `List`
  - Can be used as a dynamic array
  - When the elements need to be ordered
  - Allow duplicates
- `Set`
  - When the elements do not need to be ordered
  - Do not allow duplicates
- `Map`
  - Associative array
  - When the elements are <key,value> pairs

List Classes

- `ArrayList`
- `LinkedList`

Set Classes

- `HashSet`
- `LinkedHashSet`
- `TreeSet`
  - Also implements the `SortedSet` inteface

Map Classes

- `HashMap`
- `LinkedHashMap`
- `TreeMap`

Other Interfaces and Classes

- ◆ `SortedSet` and `SortedMap`
  - Guarantees that the iterator will traverse the elements in ascending order
- ◆ `Queue`, `Stack`, and `PriorityQueue`
- ◆ `Vector`
  - Use `ArrayList` instead
  - *Synchronized* by default

Collection and Collections

- ◆ `Collection`
  - The root interface for most of the collection interface/classes
- ◆ `Collections`
  - A class that contains a number of algorithms that can be applied to collections

Collections Algorithms

- ◆ Min, max
- ◆ Reverse, rotate, shuffle
- ◆ Binary search, sort

Examples

- ◆ Some examples