

CS 112 - Fall 2012, Lab 04

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Changes of Office Hours

- *Monday. 5-6:30 p.m.*
- *Tuesday. 5-6:30 p.m.*
- ~~*Wednesday. 3-4:30 p.m.*~~

Arrays

- An array is a container object that holds a fixed number of values of a single type.
- The length of an array is established when the array is created. After creation, its length is fixed.

Data Structure from the lectures

- Bags Not in Java API
 - *Can contain duplicate elements*
- Queues *Interface in Java API as Queue*
 - *FIFO*
- Stacks Class in Java API as Stack
 - *LIFO*
 - Implementation of List*
- Linked lists Class in Java API as LinkedList
 - *Implementation of List*

Java Collection

- **Collection** *Interface & Class (as Collections)*

- **Set (not Bag)** *Interface*
 - *Cannot contain duplicate elements*
- **Queue** *Interface*
 - *FIFO*
- **List** *Interface & Class (as List)*
 - *Can contain duplicate elements, ordered*

Implementation of Set

- *Set*
 - <http://docs.oracle.com/javase/7/docs/api/java/util/Set.html>
- `HashSet<E>`
 - <http://docs.oracle.com/javase/7/docs/api/java/util/HashSet.html>

Implementation of Queue

- *Queue*
 - <http://docs.oracle.com/javase/7/docs/api/java/util/Queue.html>
- `PriorityQueue<E>`
 - <http://docs.oracle.com/javase/7/docs/api/java/util/PriorityQueue.html>

Implementation of List

- *List*
 - <http://docs.oracle.com/javase/7/docs/api/java/util/List.html>
- ArrayList
- LinkedList
- Stack
- Vector

Iterator

- Iterator is an interface
 - <http://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html>

- Methods of Iterator
 - hasNext()
 - next()
 - remove()

Practice

- Pruning duplicate elements from a collection that has duplicate elements

7	4	4	3	5	2	3	7
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7	4	4	3	5	2	3	7
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Practice

- Use Hashset to prune
- Use iterator(), addAll in Hashset
- *Assume we have 1 million elements in an ArrayList or Queue, and we do not know how many elements have duplicates. We should use another Hashset to help us prune all duplicates in our ArrayList or Queue. Use Iterator to traverse the Hashset.*