Cheatography

Java Collections (OCA) Cheat Sheet

by Jianmin Feng (taotao) via cheatography.com/79308/cs/19511/

What's collection

a framework/architecture(a set of classes /interface) to store and manipulation group(-single unit) of objcts

sorting, searching, insert, delete, iterate etc.

many interfaces: List, Set, Queue,Dequeue

many classes: ArrayList,Vector, LinkedList,PriorityQueue,HashSet,TreeSet etc

Collection framework hierarchy

iterable --> collection -->List,Queue/Deque,Set/SortedSet

list->ArrayList,LinkedList,Vector <-Sack

Queue ->PriorityQueue

Deque ->ArrayDeque,LinkedList

SortedSet->TreeSet

Set->HashSet,LinkedHashSet

Collection Methods

public boolean add(E e)	append an item
public boolean addAll(Collection<? extends E> c)	addAll
public boolean remove(Object element)	remove 1
public boolean removeAll(Collection<?> c)	removeAll
default boolean removeIf(Predicate<? super E> filter)	removeIf

Collection Methods (cont)

public boolean retainAll(Collection<?> c)	retainAll
public int size()	size()
public void clear()	clear
public boolean isEmpty()	isEmpty
public boolean contains(Object element)	contains
public boolean containsAll(Collection<?> c)	containsAll
public Iterator iterator()	iterator
public Object[] toArray()	toArray
public <T> T[] toArray(T[] a)	toArray type
public boolean equals(Object element)	equals
public int hashCode()	hashcode
default Stream<E> parallelStream()	
default Stream<E> stream()	
default Spliterator<E> spliterator()	

Iterator interface

public boolean hasNext()

public Object next()

public void remove()

enumeration hasMoreElement(), nextElement(), but no remove()

Iterable interface

top of collection

Only one method:

Iterator<T> iterator()	return the iterator over the items of type T

4 way to iterate

1. iterator	hasNext(), next()
2. for loop	size()
3. for each loop	
4.lambda expression forEach()	list.forEach(name->name.charAt(0)='h')
mapAscii.forEach((key, value)	can be used to iterate map

List Interface

Duplicable

ArrayList	random access, add/remove expensive(shift),not ordered
LinkedList	sequence access,add/remove cheap(no shift), ordered
Vector	like ArrayList,but synchronized,more methods
Stack	extends Vector, LIFO, more methods
	boolean push(),boolean peek(),boolean push(obj)

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Queue interface

FIFO	first in first out
Ordered list of item to be processed	
Priori-tyQueue	no null item, ordered by priority
Deque	interface, doubled ended queue
ArrayDeque	add/remove from both end, faster than ArrayList and Stack

Set

unordered	no duplicate, at most one null
Hashset	
LinkedLis-tHashSet	maintain insertion order, permit nulls
SortedSet interface	sorted ascending/decendin-g/natual ordering
TreeSet	ascending order, faster access

Java Collections

java.util.Colle-ctions	Static methods
max()	min()
sort()	shuffle()
binarySearch()	copy()
reverse()	synchronizedCollec-tion()
disjoin(): split into 3 collection w/o commons	

Comparable and Comparator interfaces

Comparator	equals(), Compare()
Comparable	compareTo()

Java Map

key value pairs	not iterable
NoSuchElementEx-ception	ClassCastException
NullPointerExce-ption	UnsupportedOper-ationException
Object put(Object k, Object v)	add
void putAll(Map m)	addAll
Object remove-(Object k)	remvoe
Object get(Object k)	get
boolean containsK-ey(Object k)	ContainsKey
boolean containsV-alue(Object v)	containsValue
Set entrySet( )	value->set
Set keySet( )	key->set
Collection values( )	value->collection
int size( )	size
void clear( )	clear
boolean isEmpty( )	isEmpty
boolean equals-(Object obj)	equals
int hashCode( )	hashcode

iterate on map

No iterator	
1 for each loop	for (Map.Entry<String,String> e:myMap.entrySet()){}
	for (String k:myMap.keySet()){}
	for (String v:myMap.value()){}
2 indrect iterator	Oterator<Map.Entry<String,Stri-ng>> itr=myMao.entrySet().ite-rator()
3 stand for loop	size()
4 forEac-h(l-ambdas)	myMap.foreach((k,v)->...)
5 iterator on key	set value myMap.get(key)
not efficient, not practical	

HashMap,Treemap and Hashable

HashMap:	unique key, dup values;allow null values and null keys
TreeMap	ordered object
HashTable	synchonized, no nulls

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