

^ _ ^ CSE 143 FINAL EXAM CHEAT SHEET ^ _ ^

Constructing Various Collections

```

List<Integer> list = new ArrayList<Integer>();
Queue<Double> queue = new LinkedList<Double>();
Stack<String> stack = new Stack<String>();
Set<String> words = new HashSet<String>();
Map<String, Integer> counts = new TreeMap<String, Integer>();
    
```

Methods Found in ALL collections (Lists, Stacks, Queues, Sets, Maps)

clear()	removes all elements of the collection
equals(collection)	returns true if the given other collection contains the same elements
isEmpty()	returns true if the collection has no elements
size()	returns the number of elements in the collection
toArray()	returns an array of the elements in this collection
toString()	returns a string representation such as "[10, -2, 43]"

Methods Found in both Lists and Sets (ArrayList, LinkedList, HashSet, TreeSet)

add(value)	adds value to collection (appends at end of list)
contains(value)	returns true if the given value is found somewhere in this collection
iterator()	returns an Iterator object to traverse the collection's elements
remove(value)	finds and removes the given value from this collection
removeAll(collection)	removes any elements found in the given collection from this one
retainAll(collection)	removes any elements <i>not</i> found in the given collection from this one

List<E> Methods (10.1)

add(index, value)	inserts given value at given index, shifting subsequent values right
indexOf(value)	returns first index where given value is found in list (-1 if not found)
get(index)	returns the value at given index
lastIndexOf(value)	returns last index where given value is found in list (-1 if not found)
remove(index)	removes/returns value at given index, shifting subsequent values left
set(index, value)	replaces value at given index with given value
subList(from, to)	returns sub-portion at indexes from (inclusive) and to (exclusive)

Stack<E> Methods

peek()	returns the top value from the stack without removing it
pop()	removes the top value from the stack and returns it; peek/pop throw an EmptyStackException if the stack is empty
push(value)	places the given value on top of the stack

Queue<E> Methods

add(value)	places the given value at the back of the queue
peek()	returns the front value from the queue without removing it; returns null if the queue is empty
remove()	removes the value from the front of the queue and returns it; throws a NoSuchElementException if the queue is empty

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Map<K, V> Methods (11.3)

containsKey (key)	true if the map contains a mapping for the given key
get (key)	the value mapped to the given key (null if none)
keySet ()	returns a Set of all keys in the map
put (key, value)	adds a mapping from the given key to the given value
putAll (map)	adds all key/value pairs from the given map to this map
remove (key)	removes any existing mapping for the given key
toString ()	returns a string such as "{a=90, d=60, c=70}"
values ()	returns a Collection of all values in the map

Iterator<E> Methods (11.1)

hasNext ()	returns true if there are more elements to be read from collection
next ()	reads and returns the next element from the collection (throws a NoSuchElementException if there are no elements left)
remove ()	removes the last element returned by next from the collection (throws an IllegalStateException if next has not been called)

String Methods (3.3, 4.4)

charAt (i)	the character in this String at a given index
contains (str)	true if this String contains the other's characters inside it
endsWith (str)	true if this String ends with the other's characters
equals (str)	true if this String is the same as <i>str</i>
equalsIgnoreCase (str)	true if this String is the same as <i>str</i> , ignoring capitalization
indexOf (str)	first index in this String where given String begins (-1 if not found)
lastIndexOf (str)	last index in this String where given String begins (-1 if not found)
length ()	number of characters in this String
startsWith (str)	true if this String begins with the other's characters
substring (i, j)	characters in this String from index <i>i</i> (inclusive) to <i>j</i> (exclusive)
toLowerCase (), toUpperCase ()	a new String with all lowercase or uppercase letters

Random Methods (5.1)

nextBoolean ()	random true/false result
nextDouble ()	random real number between 0.0 and 1.0
nextInt ()	random integer
nextInt (max)	random integer between 0 and <i>max</i>

```

public class IntTreeNode {
    public int data;           // data stored in this node
    public IntTreeNode left;  // reference to left subtree
    public IntTreeNode right; // reference to right subtree
    public IntTreeNode(int data) { ... }
    public IntTreeNode(int data, IntTreeNode left, IntTreeNode right) {...}
}

public class IntTree {
    private IntTreeNode overallRoot;
    methods
}
    
```