**ARRAYLIST CLASS**

|  |  |
| --- | --- |
| boolean | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#add-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html) e)  Appends the specified element to the end of this list. |
| void | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#add-int-E-)(int index, [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html) element)  Inserts the specified element at the specified position in this list. |
| boolean | [**addAll**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#addAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<? extends [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> c)  Appends all of the elements in the specified collection to the end of this list, in the order that they are returned by the specified collection's Iterator. |
| boolean | [**addAll**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#addAll-int-java.util.Collection-)(int index, [**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<? extends [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> c)  Inserts all of the elements in the specified collection into this list, starting at the specified position. |
| void | [**clear**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#clear--)()  Removes all of the elements from this list. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) | [**clone**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#clone--)()  Returns a shallow copy of this ArrayList instance. |
| boolean | [**contains**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#contains-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns true if this list contains the specified element. |
| void | [**ensureCapacity**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#ensureCapacity-int-)(int minCapacity)  Increases the capacity of this ArrayList instance, if necessary, to ensure that it can hold at least the number of elements specified by the minimum capacity argument. |
| void | [**forEach**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#forEach-java.util.function.Consumer-)([**Consumer**](https://docs.oracle.com/javase/8/docs/api/java/util/function/Consumer.html)<? super [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> action)  Performs the given action for each element of the Iterable until all elements have been processed or the action throws an exception. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html) | [**get**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#get-int-)(int index)  Returns the element at the specified position in this list. |
| int | [**indexOf**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#indexOf-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns the index of the first occurrence of the specified element in this list, or -1 if this list does not contain the element. |
| boolean | [**isEmpty**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#isEmpty--)()  Returns true if this list contains no elements. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> | [**iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#iterator--)()  Returns an iterator over the elements in this list in proper sequence. |
| int | [**lastIndexOf**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#lastIndexOf-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns the index of the last occurrence of the specified element in this list, or -1 if this list does not contain the element. |
| [**ListIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ListIterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> | [**listIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#listIterator--)()  Returns a list iterator over the elements in this list (in proper sequence). |
| [**ListIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ListIterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> | [**listIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#listIterator-int-)(int index)  Returns a list iterator over the elements in this list (in proper sequence), starting at the specified position in the list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html) | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#remove-int-)(int index)  Removes the element at the specified position in this list. |
| boolean | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#remove-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the first occurrence of the specified element from this list, if it is present. |
| boolean | [**removeAll**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#removeAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<?> c)  Removes from this list all of its elements that are contained in the specified collection. |
| boolean | [**removeIf**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#removeIf-java.util.function.Predicate-)([**Predicate**](https://docs.oracle.com/javase/8/docs/api/java/util/function/Predicate.html)<? super [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> filter)  Removes all of the elements of this collection that satisfy the given predicate. |
| protected void | [**removeRange**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#removeRange-int-int-)(int fromIndex, int toIndex)  Removes from this list all of the elements whose index is between fromIndex, inclusive, and toIndex, exclusive. |
| void | [**replaceAll**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#replaceAll-java.util.function.UnaryOperator-)(**[UnaryOperator](https://docs.oracle.com/javase/8/docs/api/java/util/function/UnaryOperator.html" \o "interface in java.util.function)**<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> operator)  Replaces each element of this list with the result of applying the operator to that element. |
| boolean | [**retainAll**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#retainAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<?> c)  Retains only the elements in this list that are contained in the specified collection. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html) | [**set**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#set-int-E-)(int index, [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html) element)  Replaces the element at the specified position in this list with the specified element. |
| int | [**size**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#size--)()  Returns the number of elements in this list. |
| void | [**sort**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#sort-java.util.Comparator-)([**Comparator**](https://docs.oracle.com/javase/8/docs/api/java/util/Comparator.html)<? super [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> c)  Sorts this list according to the order induced by the specified [**Comparator**](https://docs.oracle.com/javase/8/docs/api/java/util/Comparator.html). |
| [**Spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> | [**spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#spliterator--)()  Creates a [***late-binding***](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html#binding) and *fail-fast* **[Spliterator](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html" \o "interface in java.util)** over the elements in this list. |
| [**List**](https://docs.oracle.com/javase/8/docs/api/java/util/List.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html)> | [**subList**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#subList-int-int-)(int fromIndex, int toIndex)  Returns a view of the portion of this list between the specified fromIndex, inclusive, and toIndex, exclusive. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html)[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#toArray--)()  Returns an array containing all of the elements in this list in proper sequence (from first to last element). |
| <T> T[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#toArray-T:A-)(T[] a)  Returns an array containing all of the elements in this list in proper sequence (from first to last element); the runtime type of the returned array is that of the specified array. |
| void | [**trimToSize**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html#trimToSize--)()  Trims the capacity of this ArrayList instance to be the list's current size. |

**LINKEDLIST CLASS**

|  |  |
| --- | --- |
| boolean | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#add-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) e)  Appends the specified element to the end of this list. |
| void | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#add-int-E-)(int index, [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) element)  Inserts the specified element at the specified position in this list. |
| boolean | [**addAll**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#addAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<? extends [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html)> c)  Appends all of the elements in the specified collection to the end of this list, in the order that they are returned by the specified collection's iterator. |
| boolean | [**addAll**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#addAll-int-java.util.Collection-)(int index, [**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<? extends [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html)> c)  Inserts all of the elements in the specified collection into this list, starting at the specified position. |
| void | [**addFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#addFirst-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) e)  Inserts the specified element at the beginning of this list. |
| void | [**addLast**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#addLast-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) e)  Appends the specified element to the end of this list. |
| void | [**clear**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#clear--)()  Removes all of the elements from this list. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) | [**clone**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#clone--)()  Returns a shallow copy of this LinkedList. |
| boolean | [**contains**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#contains-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns true if this list contains the specified element. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html)> | [**descendingIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#descendingIterator--)()  Returns an iterator over the elements in this deque in reverse sequential order. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**element**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#element--)()  Retrieves, but does not remove, the head (first element) of this list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**get**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#get-int-)(int index)  Returns the element at the specified position in this list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**getFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#getFirst--)()  Returns the first element in this list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**getLast**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#getLast--)()  Returns the last element in this list. |
| int | [**indexOf**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#indexOf-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns the index of the first occurrence of the specified element in this list, or -1 if this list does not contain the element. |
| int | [**lastIndexOf**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#lastIndexOf-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns the index of the last occurrence of the specified element in this list, or -1 if this list does not contain the element. |
| [**ListIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ListIterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html)> | [**listIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#listIterator-int-)(int index)  Returns a list-iterator of the elements in this list (in proper sequence), starting at the specified position in the list. |
| boolean | [**offer**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#offer-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) e)  Adds the specified element as the tail (last element) of this list. |
| boolean | [**offerFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#offerFirst-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) e)  Inserts the specified element at the front of this list. |
| boolean | [**offerLast**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#offerLast-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) e)  Inserts the specified element at the end of this list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**peek**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#peek--)()  Retrieves, but does not remove, the head (first element) of this list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**peekFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#peekFirst--)()  Retrieves, but does not remove, the first element of this list, or returns null if this list is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**peekLast**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#peekLast--)()  Retrieves, but does not remove, the last element of this list, or returns null if this list is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**poll**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#poll--)()  Retrieves and removes the head (first element) of this list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**pollFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#pollFirst--)()  Retrieves and removes the first element of this list, or returns null if this list is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**pollLast**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#pollLast--)()  Retrieves and removes the last element of this list, or returns null if this list is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**pop**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#pop--)()  Pops an element from the stack represented by this list. |
| void | [**push**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#push-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) e)  Pushes an element onto the stack represented by this list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#remove--)()  Retrieves and removes the head (first element) of this list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#remove-int-)(int index)  Removes the element at the specified position in this list. |
| boolean | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#remove-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the first occurrence of the specified element from this list, if it is present. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**removeFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#removeFirst--)()  Removes and returns the first element from this list. |
| boolean | [**removeFirstOccurrence**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#removeFirstOccurrence-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the first occurrence of the specified element in this list (when traversing the list from head to tail). |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**removeLast**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#removeLast--)()  Removes and returns the last element from this list. |
| boolean | [**removeLastOccurrence**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#removeLastOccurrence-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the last occurrence of the specified element in this list (when traversing the list from head to tail). |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) | [**set**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#set-int-E-)(int index, [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html) element)  Replaces the element at the specified position in this list with the specified element. |
| int | [**size**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#size--)()  Returns the number of elements in this list. |
| [**Spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html)> | [**spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#spliterator--)()  Creates a [***late-binding***](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html#binding) and *fail-fast* **[Spliterator](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html" \o "interface in java.util)** over the elements in this list. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html)[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#toArray--)()  Returns an array containing all of the elements in this list in proper sequence (from first to last element). |
| <T> T[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/LinkedList.html#toArray-T:A-)(T[] a)  Returns an array containing all of the elements in this list in proper sequence (from first to last element); the runtime type of the returned array is that of the specified array. |

**VECTOR CLASS**

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| boolean | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#add-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) e)  Appends the specified element to the end of this Vector. |
| void | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#add-int-E-)(int index, [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) element)  Inserts the specified element at the specified position in this Vector. |
| boolean | [**addAll**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#addAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<? extends [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> c)  Appends all of the elements in the specified Collection to the end of this Vector, in the order that they are returned by the specified Collection's Iterator. |
| boolean | [**addAll**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#addAll-int-java.util.Collection-)(int index, [**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<? extends [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> c)  Inserts all of the elements in the specified Collection into this Vector at the specified position. |
| void | [**addElement**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#addElement-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) obj)  Adds the specified component to the end of this vector, increasing its size by one. |
| int | [**capacity**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#capacity--)()  Returns the current capacity of this vector. |
| void | [**clear**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#clear--)()  Removes all of the elements from this Vector. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) | [**clone**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#clone--)()  Returns a clone of this vector. |
| boolean | [**contains**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#contains-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns true if this vector contains the specified element. |
| boolean | [**containsAll**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#containsAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<?> c)  Returns true if this Vector contains all of the elements in the specified Collection. |
| void | [**copyInto**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#copyInto-java.lang.Object:A-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html)[] anArray)  Copies the components of this vector into the specified array. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) | [**elementAt**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#elementAt-int-)(int index)  Returns the component at the specified index. |
| [**Enumeration**](https://docs.oracle.com/javase/8/docs/api/java/util/Enumeration.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> | [**elements**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#elements--)()  Returns an enumeration of the components of this vector. |
| void | [**ensureCapacity**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#ensureCapacity-int-)(int minCapacity)  Increases the capacity of this vector, if necessary, to ensure that it can hold at least the number of components specified by the minimum capacity argument. |
| boolean | [**equals**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#equals-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Compares the specified Object with this Vector for equality. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) | [**firstElement**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#firstElement--)()  Returns the first component (the item at index 0) of this vector. |
| void | [**forEach**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#forEach-java.util.function.Consumer-)([**Consumer**](https://docs.oracle.com/javase/8/docs/api/java/util/function/Consumer.html)<? super [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> action)  Performs the given action for each element of the Iterable until all elements have been processed or the action throws an exception. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) | [**get**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#get-int-)(int index)  Returns the element at the specified position in this Vector. |
| int | [**hashCode**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#hashCode--)()  Returns the hash code value for this Vector. |
| int | [**indexOf**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#indexOf-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns the index of the first occurrence of the specified element in this vector, or -1 if this vector does not contain the element. |
| int | [**indexOf**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#indexOf-java.lang.Object-int-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o, int index)  Returns the index of the first occurrence of the specified element in this vector, searching forwards from index, or returns -1 if the element is not found. |
| void | [**insertElementAt**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#insertElementAt-E-int-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) obj, int index)  Inserts the specified object as a component in this vector at the specified index. |
| boolean | [**isEmpty**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#isEmpty--)()  Tests if this vector has no components. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> | [**iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#iterator--)()  Returns an iterator over the elements in this list in proper sequence. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) | [**lastElement**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#lastElement--)()  Returns the last component of the vector. |
| int | [**lastIndexOf**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#lastIndexOf-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns the index of the last occurrence of the specified element in this vector, or -1 if this vector does not contain the element. |
| int | [**lastIndexOf**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#lastIndexOf-java.lang.Object-int-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o, int index)  Returns the index of the last occurrence of the specified element in this vector, searching backwards from index, or returns -1 if the element is not found. |
| [**ListIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ListIterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> | [**listIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#listIterator--)()  Returns a list iterator over the elements in this list (in proper sequence). |
| [**ListIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ListIterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> | [**listIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#listIterator-int-)(int index)  Returns a list iterator over the elements in this list (in proper sequence), starting at the specified position in the list. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#remove-int-)(int index)  Removes the element at the specified position in this Vector. |
| boolean | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#remove-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the first occurrence of the specified element in this Vector If the Vector does not contain the element, it is unchanged. |
| boolean | [**removeAll**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#removeAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<?> c)  Removes from this Vector all of its elements that are contained in the specified Collection. |
| void | [**removeAllElements**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#removeAllElements--)()  Removes all components from this vector and sets its size to zero. |
| boolean | [**removeElement**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#removeElement-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) obj)  Removes the first (lowest-indexed) occurrence of the argument from this vector. |
| void | [**removeElementAt**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#removeElementAt-int-)(int index)  Deletes the component at the specified index. |
| boolean | [**removeIf**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#removeIf-java.util.function.Predicate-)([**Predicate**](https://docs.oracle.com/javase/8/docs/api/java/util/function/Predicate.html)<? super [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> filter)  Removes all of the elements of this collection that satisfy the given predicate. |
| protected void | [**removeRange**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#removeRange-int-int-)(int fromIndex, int toIndex)  Removes from this list all of the elements whose index is between fromIndex, inclusive, and toIndex, exclusive. |
| void | [**replaceAll**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#replaceAll-java.util.function.UnaryOperator-)(**[UnaryOperator](https://docs.oracle.com/javase/8/docs/api/java/util/function/UnaryOperator.html" \o "interface in java.util.function)**<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> operator)  Replaces each element of this list with the result of applying the operator to that element. |
| boolean | [**retainAll**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#retainAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<?> c)  Retains only the elements in this Vector that are contained in the specified Collection. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) | [**set**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#set-int-E-)(int index, [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) element)  Replaces the element at the specified position in this Vector with the specified element. |
| void | [**setElementAt**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#setElementAt-E-int-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html) obj, int index)  Sets the component at the specified index of this vector to be the specified object. |
| void | [**setSize**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#setSize-int-)(int newSize)  Sets the size of this vector. |
| int | [**size**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#size--)()  Returns the number of components in this vector. |
| void | [**sort**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#sort-java.util.Comparator-)([**Comparator**](https://docs.oracle.com/javase/8/docs/api/java/util/Comparator.html)<? super [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> c)  Sorts this list according to the order induced by the specified [**Comparator**](https://docs.oracle.com/javase/8/docs/api/java/util/Comparator.html). |
| [**Spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> | [**spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#spliterator--)()  Creates a [***late-binding***](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html#binding) and *fail-fast* **[Spliterator](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html" \o "interface in java.util)** over the elements in this list. |
| [**List**](https://docs.oracle.com/javase/8/docs/api/java/util/List.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html)> | [**subList**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#subList-int-int-)(int fromIndex, int toIndex)  Returns a view of the portion of this List between fromIndex, inclusive, and toIndex, exclusive. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html)[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#toArray--)()  Returns an array containing all of the elements in this Vector in the correct order. |
| <T> T[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#toArray-T:A-)(T[] a)  Returns an array containing all of the elements in this Vector in the correct order; the runtime type of the returned array is that of the specified array. |
| [**String**](https://docs.oracle.com/javase/8/docs/api/java/lang/String.html) | [**toString**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#toString--)()  Returns a string representation of this Vector, containing the String representation of each element. |
| void | [**trimToSize**](https://docs.oracle.com/javase/8/docs/api/java/util/Vector.html#trimToSize--)()  Trims the capacity of this vector to be the vector's current size. |

**STACK CLASS**

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| boolean | [**empty**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html#empty--)()  Tests if this stack is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html) | [**peek**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html#peek--)()  Looks at the object at the top of this stack without removing it from the stack. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html) | [**pop**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html#pop--)()  Removes the object at the top of this stack and returns that object as the value of this function. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html) | [**push**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html#push-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html) item)  Pushes an item onto the top of this stack. |
| int | [**search**](https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html#search-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns the 1-based position where an object is on this stack. |

**PRIORITYQUEUE CLASS**

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| boolean | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#add-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html) e)  Inserts the specified element into this priority queue. |
| void | [**clear**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#clear--)()  Removes all of the elements from this priority queue. |
| [**Comparator**](https://docs.oracle.com/javase/8/docs/api/java/util/Comparator.html)<? super [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html)> | [**comparator**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#comparator--)()  Returns the comparator used to order the elements in this queue, or null if this queue is sorted according to the [**natural ordering**](https://docs.oracle.com/javase/8/docs/api/java/lang/Comparable.html) of its elements. |
| boolean | [**contains**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#contains-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns true if this queue contains the specified element. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html)> | [**iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#iterator--)()  Returns an iterator over the elements in this queue. |
| boolean | [**offer**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#offer-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html) e)  Inserts the specified element into this priority queue. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html) | [**peek**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#peek--)()  Retrieves, but does not remove, the head of this queue, or returns null if this queue is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html) | [**poll**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#poll--)()  Retrieves and removes the head of this queue, or returns null if this queue is empty. |
| boolean | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#remove-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes a single instance of the specified element from this queue, if it is present. |
| int | [**size**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#size--)()  Returns the number of elements in this collection. |
| [**Spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html)> | [**spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#spliterator--)()  Creates a [***late-binding***](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html#binding) and *fail-fast* **[Spliterator](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html" \o "interface in java.util)** over the elements in this queue. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html)[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#toArray--)()  Returns an array containing all of the elements in this queue. |
| <T> T[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/PriorityQueue.html#toArray-T:A-)(T[] a)  Returns an array containing all of the elements in this queue; the runtime type of the returned array is that of the specified array. |

**ARRAYDEQUEUE CLASS**

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| boolean | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#add-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) e)  Inserts the specified element at the end of this deque. |
| void | [**addFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#addFirst-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) e)  Inserts the specified element at the front of this deque. |
| void | [**addLast**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#addLast-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) e)  Inserts the specified element at the end of this deque. |
| void | [**clear**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#clear--)()  Removes all of the elements from this deque. |
| [**ArrayDeque**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html)> | [**clone**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#clone--)()  Returns a copy of this deque. |
| boolean | [**contains**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#contains-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns true if this deque contains the specified element. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html)> | [**descendingIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#descendingIterator--)()  Returns an iterator over the elements in this deque in reverse sequential order. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**element**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#element--)()  Retrieves, but does not remove, the head of the queue represented by this deque. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**getFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#getFirst--)()  Retrieves, but does not remove, the first element of this deque. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**getLast**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#getLast--)()  Retrieves, but does not remove, the last element of this deque. |
| boolean | [**isEmpty**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#isEmpty--)()  Returns true if this deque contains no elements. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html)> | [**iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#iterator--)()  Returns an iterator over the elements in this deque. |
| boolean | [**offer**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#offer-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) e)  Inserts the specified element at the end of this deque. |
| boolean | [**offerFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#offerFirst-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) e)  Inserts the specified element at the front of this deque. |
| boolean | [**offerLast**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#offerLast-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) e)  Inserts the specified element at the end of this deque. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**peek**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#peek--)()  Retrieves, but does not remove, the head of the queue represented by this deque, or returns null if this deque is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**peekFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#peekFirst--)()  Retrieves, but does not remove, the first element of this deque, or returns null if this deque is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**peekLast**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#peekLast--)()  Retrieves, but does not remove, the last element of this deque, or returns null if this deque is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**poll**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#poll--)()  Retrieves and removes the head of the queue represented by this deque (in other words, the first element of this deque), or returns null if this deque is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**pollFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#pollFirst--)()  Retrieves and removes the first element of this deque, or returns null if this deque is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**pollLast**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#pollLast--)()  Retrieves and removes the last element of this deque, or returns null if this deque is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**pop**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#pop--)()  Pops an element from the stack represented by this deque. |
| void | [**push**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#push-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) e)  Pushes an element onto the stack represented by this deque. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#remove--)()  Retrieves and removes the head of the queue represented by this deque. |
| boolean | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#remove-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes a single instance of the specified element from this deque. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**removeFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#removeFirst--)()  Retrieves and removes the first element of this deque. |
| boolean | [**removeFirstOccurrence**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#removeFirstOccurrence-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the first occurrence of the specified element in this deque (when traversing the deque from head to tail). |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html) | [**removeLast**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#removeLast--)()  Retrieves and removes the last element of this deque. |
| boolean | [**removeLastOccurrence**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#removeLastOccurrence-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the last occurrence of the specified element in this deque (when traversing the deque from head to tail). |
| int | [**size**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#size--)()  Returns the number of elements in this deque. |
| [**Spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html)> | [**spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#spliterator--)()  Creates a [***late-binding***](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html#binding) and *fail-fast* **[Spliterator](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html" \o "interface in java.util)** over the elements in this deque. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html)[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#toArray--)()  Returns an array containing all of the elements in this deque in proper sequence (from first to last element). |
| <T> T[] | [**toArray**](https://docs.oracle.com/javase/8/docs/api/java/util/ArrayDeque.html#toArray-T:A-)(T[] a)  Returns an array containing all of the elements in this deque in proper sequence (from first to last element); the runtime type of the returned array is that of the specified array. |

**HASHSET CLASS**

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| boolean | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#add-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html) e)  Adds the specified element to this set if it is not already present. |
| void | [**clear**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#clear--)()  Removes all of the elements from this set. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) | [**clone**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#clone--)()  Returns a shallow copy of this HashSet instance: the elements themselves are not cloned. |
| boolean | [**contains**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#contains-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns true if this set contains the specified element. |
| boolean | [**isEmpty**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#isEmpty--)()  Returns true if this set contains no elements. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html)> | [**iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#iterator--)()  Returns an iterator over the elements in this set. |
| boolean | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#remove-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the specified element from this set if it is present. |
| int | [**size**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#size--)()  Returns the number of elements in this set (its cardinality). |
| [**Spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html)> | [**spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/HashSet.html#spliterator--)()  Creates a [***late-binding***](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html#binding) and *fail-fast* **[Spliterator](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html" \o "interface in java.util)** over the elements in this set. |

**TREESET INTERFACE**

|  |  |
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| boolean | [**add**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#add-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) e)  Adds the specified element to this set if it is not already present. |
| boolean | [**addAll**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#addAll-java.util.Collection-)([**Collection**](https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html)<? extends [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> c)  Adds all of the elements in the specified collection to this set. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) | [**ceiling**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#ceiling-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) e)  Returns the least element in this set greater than or equal to the given element, or null if there is no such element. |
| void | [**clear**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#clear--)()  Removes all of the elements from this set. |
| [**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) | [**clone**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#clone--)()  Returns a shallow copy of this TreeSet instance. |
| [**Comparator**](https://docs.oracle.com/javase/8/docs/api/java/util/Comparator.html)<? super [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**comparator**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#comparator--)()  Returns the comparator used to order the elements in this set, or null if this set uses the [**natural ordering**](https://docs.oracle.com/javase/8/docs/api/java/lang/Comparable.html) of its elements. |
| boolean | [**contains**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#contains-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Returns true if this set contains the specified element. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**descendingIterator**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#descendingIterator--)()  Returns an iterator over the elements in this set in descending order. |
| [**NavigableSet**](https://docs.oracle.com/javase/8/docs/api/java/util/NavigableSet.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**descendingSet**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#descendingSet--)()  Returns a reverse order view of the elements contained in this set. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) | [**first**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#first--)()  Returns the first (lowest) element currently in this set. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) | [**floor**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#floor-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) e)  Returns the greatest element in this set less than or equal to the given element, or null if there is no such element. |
| [**SortedSet**](https://docs.oracle.com/javase/8/docs/api/java/util/SortedSet.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**headSet**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#headSet-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) toElement)  Returns a view of the portion of this set whose elements are strictly less than toElement. |
| [**NavigableSet**](https://docs.oracle.com/javase/8/docs/api/java/util/NavigableSet.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**headSet**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#headSet-E-boolean-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) toElement, boolean inclusive)  Returns a view of the portion of this set whose elements are less than (or equal to, if inclusive is true) toElement. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) | [**higher**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#higher-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) e)  Returns the least element in this set strictly greater than the given element, or null if there is no such element. |
| boolean | [**isEmpty**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#isEmpty--)()  Returns true if this set contains no elements. |
| [**Iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Iterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**iterator**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#iterator--)()  Returns an iterator over the elements in this set in ascending order. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) | [**last**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#last--)()  Returns the last (highest) element currently in this set. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) | [**lower**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#lower-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) e)  Returns the greatest element in this set strictly less than the given element, or null if there is no such element. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) | [**pollFirst**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#pollFirst--)()  Retrieves and removes the first (lowest) element, or returns null if this set is empty. |
| [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) | [**pollLast**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#pollLast--)()  Retrieves and removes the last (highest) element, or returns null if this set is empty. |
| boolean | [**remove**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#remove-java.lang.Object-)([**Object**](https://docs.oracle.com/javase/8/docs/api/java/lang/Object.html) o)  Removes the specified element from this set if it is present. |
| int | [**size**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#size--)()  Returns the number of elements in this set (its cardinality). |
| [**Spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**spliterator**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#spliterator--)()  Creates a [***late-binding***](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html#binding) and *fail-fast* **[Spliterator](https://docs.oracle.com/javase/8/docs/api/java/util/Spliterator.html" \o "interface in java.util)** over the elements in this set. |
| [**NavigableSet**](https://docs.oracle.com/javase/8/docs/api/java/util/NavigableSet.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**subSet**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#subSet-E-boolean-E-boolean-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) fromElement, boolean fromInclusive, [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) toElement, boolean toInclusive)  Returns a view of the portion of this set whose elements range from fromElement to toElement. |
| [**SortedSet**](https://docs.oracle.com/javase/8/docs/api/java/util/SortedSet.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**subSet**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#subSet-E-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) fromElement, [**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) toElement)  Returns a view of the portion of this set whose elements range from fromElement, inclusive, to toElement, exclusive. |
| [**SortedSet**](https://docs.oracle.com/javase/8/docs/api/java/util/SortedSet.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**tailSet**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#tailSet-E-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) fromElement)  Returns a view of the portion of this set whose elements are greater than or equal to fromElement. |
| [**NavigableSet**](https://docs.oracle.com/javase/8/docs/api/java/util/NavigableSet.html)<[**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html)> | [**tailSet**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html#tailSet-E-boolean-)([**E**](https://docs.oracle.com/javase/8/docs/api/java/util/TreeSet.html) fromElement, boolean inclusive)  Returns a view of the portion of this set whose elements are greater than (or equal to, if inclusive is true) fromElement. |