

Map

Modifier and Type	Method	Description
void	<code>clear()</code> ✓	Removes all of the mappings from this map (optional operation).
default <code>V</code>	<code>compute(K key, BiFunction&lt;? super K,? super V,? extends V&gt; remappingFunction)</code> ✓	Attempts to compute a mapping for the specified key and its current mapped value (or null if there is no current mapping).
default <code>V</code>	<code>computeIfAbsent(K key, Function&lt;? super K,? extends V&gt; mappingFunction)</code> ✓	If the specified key is not already associated with a value (or is mapped to null), attempts to compute its value using the given mapping function and enters it into this map unless null.
default <code>V</code>	<code>computeIfPresent(K key, BiFunction&lt;? super K,? super V,? extends V&gt; remappingFunction)</code> ✓	If the value for the specified key is present and non-null, attempts to compute a new mapping given the key and its current mapped value.
boolean	<code>containsKey(Object key)</code> ✓	Returns true if this map contains a mapping for the specified key.
boolean	<code>containsValue(Object value)</code> ✓	Returns true if this map maps one or more keys to the specified value.
static <code>&lt;K,V&gt; Map.Entry&lt;K,V&gt;</code>	<code>entry(K k, V v)</code> ← DA NON IMPLEMENTARE ✓	Returns an immutable <code>Map.Entry</code> containing the given key and value.
<code>Set&lt;Map.Entry&lt;K,V&gt;&gt;</code>	<code>entrySet()</code> ● ✓	Returns a <code>Set</code> view of the mappings contained in this map.
boolean	<code>equals(Object o)</code>	Compares the specified object with this map for equality.
default void	<code>forEach(BiConsumer&lt;? super K,? super V&gt; action)</code> ✓	Performs the given action for each entry in this map until all entries have been processed or the action throws an exception.
<code>V</code>	<code>get(Object key)</code> ✓	Returns the value to which the specified key is mapped, or null if this map contains no mapping for the key.
default <code>V</code>	<code>getOrDefault(Object key, V defaultValue)</code> ← DA NON IMPLEMENTARE ✓	Returns the value to which the specified key is mapped, or <code>defaultValue</code> if this map contains no mapping for the key.
int	<code>hashCode()</code>	Returns the hash code value for this map.
boolean	<code>isEmpty()</code> ✓	Returns true if this map contains no key-value mappings.
<code>Set&lt;K&gt;</code>	<code>keySet()</code> ● ✓	Returns a <code>Set</code> view of the keys contained in this map.
default <code>V</code>	<code>merge(K key, V value, BiFunction&lt;? super V,? super V,? extends V&gt; remappingFunction)</code> ✓	If the specified key is not already associated with a value or is associated with null, associates it with the given non-null value.
static <code>&lt;K,V&gt; Map&lt;K,V&gt;</code>	<code>of()</code> ✓	Returns an immutable map containing zero mappings.
static <code>&lt;K,V&gt; Map&lt;K,V&gt;</code>	<code>of(K k1, V v1)</code> ✓	Returns an immutable map containing a single mapping.
static <code>&lt;K,V&gt; Map&lt;K,V&gt;</code>	<code>of(K k1, V v1, K k2, V v2)</code> ✓	Returns an immutable map containing two mappings.
static <code>&lt;K,V&gt; Map&lt;K,V&gt;</code>	<code>of(K k1, V v1, K k2, V v2, K k3, V v3)</code> ✓	Returns an immutable map containing three mappings.
static <code>&lt;K,V&gt; Map&lt;K,V&gt;</code>	<code>of(K k1, V v1, K k2, V v2, K k3, V v3, K k4, V v4)</code> ✓	Returns an immutable map containing four mappings.
static <code>&lt;K,V&gt; Map&lt;K,V&gt;</code>	<code>of(K k1, V v1, K k2, V v2, K k3, V v3, K k4, V v4, K k5, V v5)</code> ✓	Returns an immutable map containing five mappings.
static <code>&lt;K,V&gt; Map&lt;K,V&gt;</code>	<code>of(K k1, V v1, K k2, V v2, K k3, V v3, K k4, V v4, K k5, V v5, K k6, V v6)</code> ✓	Returns an immutable map containing six mappings.
static <code>&lt;K,V&gt; Map&lt;K,V&gt;</code>	<code>of(K k1, V v1, K k2, V v2, K k3, V v3, K k4, V v4, K k5, V v5, K k6, V v6, K k7, V v7)</code> ✓	Returns an immutable map containing seven mappings.

static <K,V> <u>Map</u> <K,V>	<u>of</u> (K k1, V v1, K k2, V v2, K k3, V v3, K k4, V v4, K k5, V v5, K k6, V v6, K k7, V v7, K k8, V v8)	Returns an immutable map containing eight mappings.
static <K,V> <u>Map</u> <K,V>	<u>of</u> (K k1, V v1, K k2, V v2, K k3, V v3, K k4, V v4, K k5, V v5, K k6, V v6, K k7, V v7, K k8, V v8, K k9, V v9)	Returns an immutable map containing nine mappings.
static <K,V> <u>Map</u> <K,V>	<u>of</u> (K k1, V v1, K k2, V v2, K k3, V v3, K k4, V v4, K k5, V v5, K k6, V v6, K k7, V v7, K k8, V v8, K k9, V v9, K k10, V v10)	Returns an immutable map containing ten mappings.
static <K,V> <u>Map</u> <K,V>	<u>ofEntries</u> ( <u>Map.Entry</u> <? extends K,? extends V>... entries)	Returns an immutable map containing keys and values extracted from the given entries.
<u>V</u>	<u>put</u> ( <u>K</u> key, <u>V</u> value)	Associates the specified value with the specified key in this map (optional operation).
void	<u>putAll</u> ( <u>Map</u> <? extends <u>K</u> ,? extends <u>V</u> > m)	Copies all of the mappings from the specified map to this map (optional operation).
default <u>V</u>	<u>putIfAbsent</u> ( <u>K</u> key, <u>V</u> value)	If the specified key is not already associated with a value (or is mapped to null) associates it with the given value and returns null, else returns the current value.
<u>V</u>	<u>remove</u> ( <u>Object</u> key)	Removes the mapping for a key from this map if it is present (optional operation).
default boolean	<u>remove</u> ( <u>Object</u> key, <u>Object</u> value)	Removes the entry for the specified key only if it is currently mapped to the specified value.
default <u>V</u>	<u>replace</u> ( <u>K</u> key, <u>V</u> value)	Replaces the entry for the specified key only if it is currently mapped to some value.
default boolean	<u>replace</u> ( <u>K</u> key, <u>V</u> oldValue, <u>V</u> newValue)	Replaces the entry for the specified key only if currently mapped to the specified value.
default void	<u>replaceAll</u> ( <u>BiFunction</u> <? super <u>K</u> ,? super <u>V</u> ,? extends <u>V</u> > function)	Replaces each entry's value with the result of invoking the given function on that entry until all entries have been processed or the function throws an exception.
int	<u>size</u> ()	Returns the number of key-value mappings in this map.
<u>Collection</u> < <u>V</u> >	<u>values</u> ()	Returns a <u>Collection</u> view of the values contained in this map.

# LIST FINITA

## List

Modifier and Type	Method	Description
void	<u>add</u> (int index, <u>E</u> element) ✓	Inserts the specified element at the specified position in this list (optional operation).
boolean	<u>add</u> ( <u>E</u> e) ✓	Appends the specified element to the end of this list (optional operation).
boolean	<u>addAll</u> (int index, <u>Collection</u> <? extends <u>E</u> > c) ● ✓	Inserts all of the elements in the specified collection into this list at the specified position (optional operation).
boolean	<u>addAll</u> ( <u>Collection</u> <? extends <u>E</u> > 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 (optional operation).
void	<u>clear</u> () ✓	Removes all of the elements from this list (optional operation).
boolean	<u>contains</u> ( <u>Object</u> o) ✓	Returns true if this list contains the specified element.
boolean	<u>containsAll</u> ( <u>Collection</u> <?> c) ✓	Returns true if this list contains all of the elements of the specified collection.
boolean	<u>equals</u> ( <u>Object</u> o) ✓	Compares the specified object with this list for equality.
<u>E</u>	<u>get</u> (int index) ✓	Returns the element at the specified position in this list.
int	<u>hashCode</u> () ✓	Returns the hash code value for this list.
int	<u>indexOf</u> ( <u>Object</u> 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	<u>isEmpty</u> () ✓	Returns true if this list contains no elements.
<u>Iterator</u> < <u>E</u> >	<u>iterator</u> () ✓	Returns an iterator over the elements in this list in proper sequence.
int	<u>lastIndexOf</u> ( <u>Object</u> 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.
<u>ListIterator</u> < <u>E</u> >	<u>listIterator</u> () ✓	Returns a list iterator over the elements in this list (in proper sequence).
<u>ListIterator</u> < <u>E</u> >	<u>listIterator</u> (int index) ✓	Returns a list iterator over the elements in this list (in proper sequence), starting at the specified position in the list.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> () ✓	Returns an immutable list containing zero elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1) ✓	Returns an immutable list containing one element.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> ... elements) ✓	Returns an immutable list containing an arbitrary number of elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2) ✓	Returns an immutable list containing two elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3) ✓	Returns an immutable list containing three elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4) ✓	Returns an immutable list containing four elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5) ✓	Returns an immutable list containing five elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6) ✓	Returns an immutable list containing six elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6, <u>E</u> e7) ✓	Returns an immutable list containing seven elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6, <u>E</u> e7, <u>E</u> e8) ✓	Returns an immutable list containing eight elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6, <u>E</u> e7, <u>E</u> e8, <u>E</u> e9) ✓	Returns an immutable list containing nine elements.
static < <u>E</u> > <u>List</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6, <u>E</u> e7, <u>E</u> e8, <u>E</u> e9, <u>E</u> e10) ✓	Returns an immutable list containing ten elements.

<u>E</u>	<u>remove</u> (int index) ✓	Removes the element at the specified position in this list (optional operation).
boolean	<u>remove</u> ( <u>Object</u> o) ✓	Removes the first occurrence of the specified element from this list, if it is present (optional operation).
boolean	<u>removeAll</u> ( <u>Collection</u> <?> c) ✓	Removes from this list all of its elements that are contained in the specified collection (optional operation).
default void	<u>replaceAll</u> ( <u>UnaryOperator</u> < <u>E</u> > operator) ✓	Replaces each element of this list with the result of applying the operator to that element.
boolean	<u>retainAll</u> ( <u>Collection</u> <?> c) ● ✓	Retains only the elements in this list that are contained in the specified collection (optional operation).
<u>E</u>	<u>set</u> (int index, <u>E</u> element) ✓	Replaces the element at the specified position in this list with the specified element (optional operation).
int	<u>size</u> () ✓	Returns the number of elements in this list.
default void	<u>sort</u> ( <u>Comparator</u> <? super <u>E</u> > c) ● ✓	Sorts this list according to the order induced by the specified <u>Comparator</u> .
default <u>Splitterator</u> < <u>E</u> >	<u>spliterator</u> () ✓	Creates a <u>Splitterator</u> over the elements in this list.
<u>List</u> < <u>E</u> >	<u>subList</u> (int fromIndex, int toIndex) ✓	Returns a view of the portion of this list between the specified fromIndex, inclusive, and toIndex, exclusive.
<u>Object</u> []	<u>toArray</u> () ✓	Returns an array containing all of the elements in this list in proper sequence (from first to last element).
<T> T[]	<u>toArray</u> (T[] a) ● ← DA NON IMPLEMENTARE	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.

# SET FINITA

## Set

Modifier and Type	Method	Description
boolean	<u>add</u> ( <u>E</u> e) ✓	Adds the specified element to this set if it is not already present (optional operation).
boolean	<u>addAll</u> ( <u>Collection</u> <? extends <u>E</u> > c) ✓	Adds all of the elements in the specified collection to this set if they're not already present (optional operation).
void	<u>clear</u> () ✓	Removes all of the elements from this set (optional operation).
boolean	<u>contains</u> ( <u>Object</u> o) ✓	Returns <code>true</code> if this set contains the specified element.
boolean	<u>containsAll</u> ( <u>Collection</u> <?> c) ✓	Returns <code>true</code> if this set contains all of the elements of the specified collection.
boolean	<u>equals</u> ( <u>Object</u> o)	Compares the specified object with this set for equality.
int	<u>hashCode</u> ()	Returns the hash code value for this set.
boolean	<u>isEmpty</u> () ✓	Returns <code>true</code> if this set contains no elements.
<u>Iterator</u> < <u>E</u> >	<u>iterator</u> () ✓	Returns an iterator over the elements in this set.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> () ✓	Returns an immutable set containing zero elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1) ✓	Returns an immutable set containing one element.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> ... elements) ✓	Returns an immutable set containing an arbitrary number of elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2) ✓	Returns an immutable set containing two elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3) ✓	Returns an immutable set containing three elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4) ✓	Returns an immutable set containing four elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5) ✓	Returns an immutable set containing five elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6) ✓	Returns an immutable set containing six elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6, <u>E</u> e7) ✓	Returns an immutable set containing seven elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6, <u>E</u> e7, <u>E</u> e8) ✓	Returns an immutable set containing eight elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6, <u>E</u> e7, <u>E</u> e8, <u>E</u> e9) ✓	Returns an immutable set containing nine elements.
static < <u>E</u> > <u>Set</u> < <u>E</u> >	<u>of</u> ( <u>E</u> e1, <u>E</u> e2, <u>E</u> e3, <u>E</u> e4, <u>E</u> e5, <u>E</u> e6, <u>E</u> e7, <u>E</u> e8, <u>E</u> e9, <u>E</u> e10) ✓	Returns an immutable set containing ten elements.
boolean	<u>remove</u> ( <u>Object</u> o) ✓	Removes the specified element from this set if it is present (optional operation).
boolean	<u>removeAll</u> ( <u>Collection</u> <?> c) ✓	Removes from this set all of its elements that are contained in the specified collection (optional operation).
boolean	<u>retainAll</u> ( <u>Collection</u> <?> c) ✓	Retains only the elements in this set that are contained in the specified collection (optional operation).
int	<u>size</u> () ✓	Returns the number of elements in this set (its cardinality).
default <u>Splititerator</u> < <u>E</u> >	<u>splititerator</u> () ✓	Creates a <code>Splititerator</code> over the elements in this set.
<u>Object</u> []	<u>toArray</u> () ✓	Returns an array containing all of the elements in this set.
< <u>T</u> > <u>T</u> []	<u>toArray</u> ( <u>T</u> [] a) ✓ DA NON IMPLEMENTARE ✓	Returns an array containing all of the elements in this set; the runtime type of the returned array is that of the specified array.

COLLECTION FINITA

Collection

Modifier and Type	Method	Description
boolean	<u>add</u> ( <u>E</u> e) ✓	Ensures that this collection contains the specified element (optional operation). 3 TEST
boolean	<u>addAll</u> ( <u>Collection</u> <? extends <u>E</u> > c) ✓	Adds all of the elements in the specified collection to this collection (optional operation). 2 TEST (TRUE, NULL, FALSE?)
void	<u>clear</u> () ✓	Removes all of the elements from this collection (optional operation). 1 TEST
boolean	<u>contains</u> ( <u>Object</u> o) ✓	Returns true if this collection contains the specified element. 3 TEST (TRUE, FALSE, NULL)
boolean	<u>containsAll</u> ( <u>Collection</u> <?> c) ✓	Returns true if this collection contains all of the elements in the specified collection. 3 TEST (TRUE, FALSE, NULL)
boolean	<u>equals</u> ( <u>Object</u> o) ✓	Compares the specified object with this collection for equality. 1 TEST
int	<u>hashCode</u> () ✓	Returns the hash code value for this collection. TEST INEQUALS
boolean	<u>isEmpty</u> () ✓	Returns true if this collection contains no elements. 2 TEST (WORD E PIENO)
<u>Iterator</u> < <u>E</u> >	<u>iterator</u> () ✓	Returns an iterator over the elements in this collection. 1 TEST
default <u>Stream</u> < <u>E</u> >	<u>parallelStream</u> () ✓	Returns a possibly parallel <u>Stream</u> with this collection as its source. 1 TEST
boolean	<u>remove</u> ( <u>Object</u> o) ✓	Removes a single instance of the specified element from this collection, if it is present (optional operation). 4 TEST (TRUE, FALSE, NULL, EMPTY)
boolean	<u>removeAll</u> ( <u>Collection</u> <?> c) ✓	Removes all of this collection's elements that are also contained in the specified collection (optional operation). 2 TEST (TRUE, FALSE)
default boolean	<u>removeIf</u> ( <u>Predicate</u> <? super <u>E</u> > filter) ✓	Removes all of the elements of this collection that satisfy the given predicate. 1 TEST
boolean	<u>retainAll</u> ( <u>Collection</u> <?> c) ● ✓	Retains only the elements in this collection that are contained in the specified collection (optional operation). 2 TEST TRUE / FALSE
int	<u>size</u> () ✓	Returns the number of elements in this collection. TEST IN ADD
default <u>Spliterator</u> < <u>E</u> >	<u>spliterator</u> () ✓	Creates a <u>Spliterator</u> over the elements in this collection. 1 TEST
default <u>Stream</u> < <u>E</u> >	<u>stream</u> () ✓	Returns a sequential <u>Stream</u> with this collection as its source. 1 TEST
<u>Object</u> []	<u>toArray</u> () ✓	Returns an array containing all of the elements in this collection. 2 TEST (CON ELEMENTI, e NULL)
<T> T[]	<u>toArray</u> (T[] a) ● → DA NON IMPLEMENTARE	Returns an array containing all of the elements in this collection; the runtime type of the returned array is that of the specified array. 1 TEST