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org.apache.commons.collections4

## Class BagUtils

* [java.lang.Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)
  + org.apache.commons.collections4.BagUtils
* public class BagUtils  
  extends [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)  
  Provides utility methods and decorators for [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) and [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html) instances.Since: 2.1

### Field SummaryFields

|  |  |
| --- | --- |
| * + Modifier and Type | * + Field and Description |
| * + static [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) | * + [EMPTY\_BAG](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#EMPTY_BAG) An empty unmodifiable bag. |
| * + static [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) | * + [EMPTY\_SORTED\_BAG](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#EMPTY_SORTED_BAG) An empty unmodifiable sorted bag. |

### Method SummaryAll Methods Static Methods Concrete Methods

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> | * + [collectionBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#collectionBag-org.apache.commons.collections4.Bag-)([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag) Returns a bag that complies to the Collection contract, backed by the given bag. |
| * + static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> | * + [emptyBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#emptyBag--)() Get an empty Bag. |
| * + static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> | * + [emptySortedBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#emptySortedBag--)() Get an empty SortedBag. |
| * + static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> | * + [predicatedBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#predicatedBag-org.apache.commons.collections4.Bag-org.apache.commons.collections4.Predicate-)([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag, [Predicate](http://docs.google.com/org/apache/commons/collections4/Predicate.html)<? super E> predicate) Returns a predicated (validating) bag backed by the given bag. |
| * + static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> | * + [predicatedSortedBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#predicatedSortedBag-org.apache.commons.collections4.SortedBag-org.apache.commons.collections4.Predicate-)([SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> bag, [Predicate](http://docs.google.com/org/apache/commons/collections4/Predicate.html)<? super E> predicate) Returns a predicated (validating) sorted bag backed by the given sorted bag. |
| * + static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> | * + [synchronizedBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#synchronizedBag-org.apache.commons.collections4.Bag-)([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag) Returns a synchronized (thread-safe) bag backed by the given bag. |
| * + static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> | * + [synchronizedSortedBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#synchronizedSortedBag-org.apache.commons.collections4.SortedBag-)([SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> bag) Returns a synchronized (thread-safe) sorted bag backed by the given sorted bag. |
| * + static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> | * + [transformingBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#transformingBag-org.apache.commons.collections4.Bag-org.apache.commons.collections4.Transformer-)([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag, [Transformer](http://docs.google.com/org/apache/commons/collections4/Transformer.html)<? super E,? extends E> transformer) Returns a transformed bag backed by the given bag. |
| * + static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> | * + [transformingSortedBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#transformingSortedBag-org.apache.commons.collections4.SortedBag-org.apache.commons.collections4.Transformer-)([SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> bag, [Transformer](http://docs.google.com/org/apache/commons/collections4/Transformer.html)<? super E,? extends E> transformer) Returns a transformed sorted bag backed by the given bag. |
| * + static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> | * + [unmodifiableBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#unmodifiableBag-org.apache.commons.collections4.Bag-)([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<? extends E> bag) Returns an unmodifiable view of the given bag. |
| * + static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> | * + [unmodifiableSortedBag](http://docs.google.com/org/apache/commons/collections4/BagUtils.html#unmodifiableSortedBag-org.apache.commons.collections4.SortedBag-)([SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> bag) Returns an unmodifiable view of the given sorted bag. |

### Methods inherited from class java.lang.[**Object**](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)[clone](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#clone--), [equals](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#equals-java.lang.Object-), [finalize](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#finalize--), [getClass](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#getClass--), [hashCode](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#hashCode--), [notify](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#notify--), [notifyAll](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#notifyAll--), [toString](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#toString--), [wait](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#wait--), [wait](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#wait-long-), [wait](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#wait-long-int-)

### Field Detail

#### EMPTY\_BAG public static final [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) EMPTY\_BAG An empty unmodifiable bag.

#### EMPTY\_SORTED\_BAG public static final [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) EMPTY\_SORTED\_BAG An empty unmodifiable sorted bag.

### Method Detail

#### synchronizedBag public static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> synchronizedBag([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag) Returns a synchronized (thread-safe) bag backed by the given bag. In order to guarantee serial access, it is critical that all access to the backing bag is accomplished through the returned bag. It is imperative that the user manually synchronize on the returned bag when iterating over it: Bag bag = BagUtils.synchronizedBag(new HashBag()); ... synchronized(bag) { Iterator i = bag.iterator(); // Must be in synchronized block while (i.hasNext()) foo(i.next()); } } Failure to follow this advice may result in non-deterministic behavior.Type Parameters: E - the element type Parameters: bag - the bag to synchronize, must not be null Returns: a synchronized bag backed by that bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the Bag is null

#### unmodifiableBag public static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> unmodifiableBag([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<? extends E> bag) Returns an unmodifiable view of the given bag. Any modification attempts to the returned bag will raise an [UnsupportedOperationException](https://docs.oracle.com/javase/7/docs/api/java/lang/UnsupportedOperationException.html?is-external=true).Type Parameters: E - the element type Parameters: bag - the bag whose unmodifiable view is to be returned, must not be null Returns: an unmodifiable view of that bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the Bag is null

#### predicatedBag public static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> predicatedBag([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag, [Predicate](http://docs.google.com/org/apache/commons/collections4/Predicate.html)<? super E> predicate) Returns a predicated (validating) bag backed by the given bag. Only objects that pass the test in the given predicate can be added to the bag. Trying to add an invalid object results in an IllegalArgumentException. It is important not to use the original bag after invoking this method, as it is a backdoor for adding invalid objects.Type Parameters: E - the element type Parameters: bag - the bag to predicate, must not be null predicate - the predicate for the bag, must not be null Returns: a predicated bag backed by the given bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the Bag or Predicate is null

#### transformingBag public static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> transformingBag([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag, [Transformer](http://docs.google.com/org/apache/commons/collections4/Transformer.html)<? super E,? extends E> transformer) Returns a transformed bag backed by the given bag. Each object is passed through the transformer as it is added to the Bag. It is important not to use the original bag after invoking this method, as it is a backdoor for adding untransformed objects. Existing entries in the specified bag will not be transformed. If you want that behaviour, see [TransformedBag.transformedBag(Bag, Transformer)](http://docs.google.com/org/apache/commons/collections4/bag/TransformedBag.html#transformedBag-org.apache.commons.collections4.Bag-org.apache.commons.collections4.Transformer-).Type Parameters: E - the element type Parameters: bag - the bag to predicate, must not be null transformer - the transformer for the bag, must not be null Returns: a transformed bag backed by the given bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the Bag or Transformer is null

#### collectionBag public static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> collectionBag([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag) Returns a bag that complies to the Collection contract, backed by the given bag.Type Parameters: E - the element type Parameters: bag - the bag to decorate, must not be null Returns: a Bag that complies to the Collection contract Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if bag is null Since: 4.0

#### synchronizedSortedBag public static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> synchronizedSortedBag([SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> bag) Returns a synchronized (thread-safe) sorted bag backed by the given sorted bag. In order to guarantee serial access, it is critical that all access to the backing bag is accomplished through the returned bag. It is imperative that the user manually synchronize on the returned bag when iterating over it: SortedBag bag = BagUtils.synchronizedSortedBag(new TreeBag()); ... synchronized(bag) { Iterator i = bag.iterator(); // Must be in synchronized block while (i.hasNext()) foo(i.next()); } } Failure to follow this advice may result in non-deterministic behavior.Type Parameters: E - the element type Parameters: bag - the bag to synchronize, must not be null Returns: a synchronized bag backed by that bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the SortedBag is null

#### unmodifiableSortedBag public static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> unmodifiableSortedBag([SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> bag) Returns an unmodifiable view of the given sorted bag. Any modification attempts to the returned bag will raise an [UnsupportedOperationException](https://docs.oracle.com/javase/7/docs/api/java/lang/UnsupportedOperationException.html?is-external=true).Type Parameters: E - the element type Parameters: bag - the bag whose unmodifiable view is to be returned, must not be null Returns: an unmodifiable view of that bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the SortedBag is null

#### predicatedSortedBag public static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> predicatedSortedBag([SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> bag, [Predicate](http://docs.google.com/org/apache/commons/collections4/Predicate.html)<? super E> predicate) Returns a predicated (validating) sorted bag backed by the given sorted bag. Only objects that pass the test in the given predicate can be added to the bag. Trying to add an invalid object results in an IllegalArgumentException. It is important not to use the original bag after invoking this method, as it is a backdoor for adding invalid objects.Type Parameters: E - the element type Parameters: bag - the sorted bag to predicate, must not be null predicate - the predicate for the bag, must not be null Returns: a predicated bag backed by the given bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the SortedBag or Predicate is null

#### transformingSortedBag public static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> transformingSortedBag([SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> bag, [Transformer](http://docs.google.com/org/apache/commons/collections4/Transformer.html)<? super E,? extends E> transformer) Returns a transformed sorted bag backed by the given bag. Each object is passed through the transformer as it is added to the Bag. It is important not to use the original bag after invoking this method, as it is a backdoor for adding untransformed objects. Existing entries in the specified bag will not be transformed. If you want that behaviour, see [TransformedSortedBag.transformedSortedBag(SortedBag, Transformer)](http://docs.google.com/org/apache/commons/collections4/bag/TransformedSortedBag.html#transformedSortedBag-org.apache.commons.collections4.SortedBag-org.apache.commons.collections4.Transformer-).Type Parameters: E - the element type Parameters: bag - the bag to predicate, must not be null transformer - the transformer for the bag, must not be null Returns: a transformed bag backed by the given bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the Bag or Transformer is null

#### emptyBag public static <E> [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> emptyBag() Get an empty Bag.Type Parameters: E - the element type Returns: an empty Bag

#### emptySortedBag public static <E> [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html)<E> emptySortedBag() Get an empty SortedBag.Type Parameters: E - the element type Returns: an empty sorted Bag

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* [Tree](http://docs.google.com/package-tree.html)
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