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Package org.apache.commons.collections4.bag

This package contains implementations of the [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) and [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html) interfaces.

See: [Description](#3znysh7)

* Class Summary

|  |  |
| --- | --- |
| * Class | * Description |
| * [AbstractBagDecorator](http://docs.google.com/org/apache/commons/collections4/bag/AbstractBagDecorator.html)<E> | * Decorates another Bag to provide additional behaviour. |
| * [AbstractMapBag](http://docs.google.com/org/apache/commons/collections4/bag/AbstractMapBag.html)<E> | * Abstract implementation of the [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) interface to simplify the creation of subclass implementations. |
| * [AbstractMapBag.MutableInteger](http://docs.google.com/org/apache/commons/collections4/bag/AbstractMapBag.MutableInteger.html) | * Mutable integer class for storing the data. |
| * [AbstractSortedBagDecorator](http://docs.google.com/org/apache/commons/collections4/bag/AbstractSortedBagDecorator.html)<E> | * Decorates another SortedBag to provide additional behaviour. |
| * [CollectionBag](http://docs.google.com/org/apache/commons/collections4/bag/CollectionBag.html)<E> | * Decorates another [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) to comply with the Collection contract. |
| * [CollectionSortedBag](http://docs.google.com/org/apache/commons/collections4/bag/CollectionSortedBag.html)<E> | * Decorates another [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html) to comply with the Collection contract. |
| * [HashBag](http://docs.google.com/org/apache/commons/collections4/bag/HashBag.html)<E> | * Implements Bag, using a [HashMap](https://docs.oracle.com/javase/7/docs/api/java/util/HashMap.html?is-external=true) to provide the data storage. |
| * [PredicatedBag](http://docs.google.com/org/apache/commons/collections4/bag/PredicatedBag.html)<E> | * Decorates another [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) to validate that additions match a specified predicate. |
| * [PredicatedSortedBag](http://docs.google.com/org/apache/commons/collections4/bag/PredicatedSortedBag.html)<E> | * Decorates another [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html) to validate that additions match a specified predicate. |
| * [SynchronizedBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)<E> | * Decorates another [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) to synchronize its behaviour for a multi-threaded environment. |
| * [SynchronizedSortedBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedSortedBag.html)<E> | * Decorates another [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html) to synchronize its behaviour for a multi-threaded environment. |
| * [TransformedBag](http://docs.google.com/org/apache/commons/collections4/bag/TransformedBag.html)<E> | * Decorates another [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) to transform objects that are added. |
| * [TransformedSortedBag](http://docs.google.com/org/apache/commons/collections4/bag/TransformedSortedBag.html)<E> | * Decorates another [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html) to transform objects that are added. |
| * [TreeBag](http://docs.google.com/org/apache/commons/collections4/bag/TreeBag.html)<E> | * Implements [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html), using a [TreeMap](https://docs.oracle.com/javase/7/docs/api/java/util/TreeMap.html?is-external=true) to provide the data storage. |
| * [UnmodifiableBag](http://docs.google.com/org/apache/commons/collections4/bag/UnmodifiableBag.html)<E> | * Decorates another [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) to ensure it can't be altered. |
| * [UnmodifiableSortedBag](http://docs.google.com/org/apache/commons/collections4/bag/UnmodifiableSortedBag.html)<E> | * Decorates another [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html) to ensure it can't be altered. |

## Package org.apache.commons.collections4.bag Description

This package contains implementations of the [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) and [SortedBag](http://docs.google.com/org/apache/commons/collections4/SortedBag.html) interfaces. A bag stores an object and a count of the number of occurrences of the object.

The following implementations are provided in the package:

* HashBag - implementation that uses a HashMap to store the data
* TreeBag - implementation that uses a TreeMap to store the data

The following decorators are provided in the package:

* Synchronized - synchronizes method access for multi-threaded environments
* Unmodifiable - ensures the bag cannot be altered
* Predicated - ensures that only elements that are valid according to a predicate can be added
* Transformed - transforms each element added to the bag
* Collection - ensures compliance with the java.util.Collection contract

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