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* [Overview](http://docs.google.com/overview-summary.html)
* [Package](http://docs.google.com/package-summary.html)
* Class
* [Use](http://docs.google.com/class-use/SynchronizedBag.html)
* [Tree](http://docs.google.com/package-tree.html)
* [Deprecated](http://docs.google.com/deprecated-list.html)
* [Index](http://docs.google.com/index-all.html)
* [Help](http://docs.google.com/help-doc.html)
* [Prev Class](http://docs.google.com/org/apache/commons/collections4/bag/PredicatedSortedBag.html)
* [Next Class](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedSortedBag.html)
* [Frames](http://docs.google.com/index.html?org/apache/commons/collections4/bag/SynchronizedBag.html)
* [No Frames](http://docs.google.com/SynchronizedBag.html)
* [All Classes](http://docs.google.com/allclasses-noframe.html)
* Summary:
* Nested |
* [Field](#2et92p0) |
* [Constr](#tyjcwt) |
* [Method](#3dy6vkm)
* Detail:
* Field |
* [Constr](#26in1rg) |
* [Method](#1ksv4uv)

org.apache.commons.collections4.bag

## Class SynchronizedBag<E>

* [java.lang.Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)
  + [org.apache.commons.collections4.collection.SynchronizedCollection](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html)<E>
    - org.apache.commons.collections4.bag.SynchronizedBag<E>
* Type Parameters: E - the type of elements in this bag All Implemented Interfaces: [Serializable](https://docs.oracle.com/javase/7/docs/api/java/io/Serializable.html?is-external=true), [Iterable](https://docs.oracle.com/javase/7/docs/api/java/lang/Iterable.html?is-external=true)<E>, [Collection](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true)<E>, [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> Direct Known Subclasses: [SynchronizedSortedBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedSortedBag.html)  
    
  public class SynchronizedBag<E>  
  extends [SynchronizedCollection](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html)<E>  
  implements [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E>  
  Decorates another [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html) to synchronize its behaviour for a multi-threaded environment.  
  Methods are synchronized, then forwarded to the decorated bag. Iterators must be separately synchronized around the loop.  
  This class is Serializable from Commons Collections 3.1.Since: 3.0 See Also: [Serialized Form](http://docs.google.com/serialized-form.html#org.apache.commons.collections4.bag.SynchronizedBag)

### Field Summary

### Fields inherited from class org.apache.commons.collections4.collection.[**SynchronizedCollection**](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html)[lock](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#lock)

### Constructor SummaryConstructors

|  |  |
| --- | --- |
| * + Modifier | * + Constructor and Description |
| * + protected | * + [SynchronizedBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#SynchronizedBag-org.apache.commons.collections4.Bag-)([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> bag) Constructor that wraps (not copies). |
| * + protected | * + [SynchronizedBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#SynchronizedBag-org.apache.commons.collections4.Bag-java.lang.Object-)([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> bag, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) lock) Constructor that wraps (not copies). |

### Method SummaryAll Methods Static Methods Instance Methods Concrete Methods

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + boolean | * + [add](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#add-E-int-)([E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html) object, int count) Adds nCopies copies of the specified object to the Bag. |
| * + boolean | * + [equals](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#equals-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) object) |
| * + protected [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> | * + [getBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#getBag--)() Gets the bag being decorated. |
| * + int | * + [getCount](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#getCount-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) object) Returns the number of occurrences (cardinality) of the given object currently in the bag. |
| * + int | * + [hashCode](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#hashCode--)() |
| * + boolean | * + [remove](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#remove-java.lang.Object-int-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) object, int count) Removes nCopies copies of the specified object from the Bag. |
| * + static <E> [SynchronizedBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)<E> | * + [synchronizedBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#synchronizedBag-org.apache.commons.collections4.Bag-)([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag) Factory method to create a synchronized bag. |
| * + [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> | * + [uniqueSet](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html#uniqueSet--)() Returns a [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true) of unique elements in the Bag. |

### Methods inherited from class org.apache.commons.collections4.collection.[**SynchronizedCollection**](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html)[add](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#add-E-), [addAll](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#addAll-java.util.Collection-), [clear](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#clear--), [contains](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#contains-java.lang.Object-), [containsAll](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#containsAll-java.util.Collection-), [decorated](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#decorated--), [isEmpty](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#isEmpty--), [iterator](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#iterator--), [remove](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#remove-java.lang.Object-), [removeAll](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#removeAll-java.util.Collection-), [removeIf](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#removeIf-java.util.function.Predicate-), [retainAll](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#retainAll-java.util.Collection-), [size](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#size--), [synchronizedCollection](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#synchronizedCollection-java.util.Collection-), [toArray](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#toArray--), [toArray](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#toArray-T:A-), [toString](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#toString--)

### 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--), [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--), [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--), [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-)

### Methods inherited from interface org.apache.commons.collections4.[**Bag**](http://docs.google.com/org/apache/commons/collections4/Bag.html)[add](http://docs.google.com/org/apache/commons/collections4/Bag.html#add-E-), [containsAll](http://docs.google.com/org/apache/commons/collections4/Bag.html#containsAll-java.util.Collection-), [iterator](http://docs.google.com/org/apache/commons/collections4/Bag.html#iterator--), [remove](http://docs.google.com/org/apache/commons/collections4/Bag.html#remove-java.lang.Object-), [removeAll](http://docs.google.com/org/apache/commons/collections4/Bag.html#removeAll-java.util.Collection-), [retainAll](http://docs.google.com/org/apache/commons/collections4/Bag.html#retainAll-java.util.Collection-), [size](http://docs.google.com/org/apache/commons/collections4/Bag.html#size--)

### Methods inherited from interface java.util.[**Collection**](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true)[addAll](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#addAll-java.util.Collection-), [clear](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#clear--), [contains](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#contains-java.lang.Object-), [isEmpty](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#isEmpty--), [parallelStream](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#parallelStream--), [removeIf](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#removeIf-java.util.function.Predicate-), [spliterator](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#spliterator--), [stream](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#stream--), [toArray](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#toArray--), [toArray](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#toArray-T:A-)

### Methods inherited from interface java.lang.[**Iterable**](https://docs.oracle.com/javase/7/docs/api/java/lang/Iterable.html?is-external=true)[forEach](https://docs.oracle.com/javase/7/docs/api/java/lang/Iterable.html?is-external=true#forEach-java.util.function.Consumer-)

### Constructor Detail

#### SynchronizedBag protected SynchronizedBag([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> bag) Constructor that wraps (not copies).Parameters: bag - the bag to decorate, must not be null Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if bag is null

#### SynchronizedBag protected SynchronizedBag([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> bag, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) lock) Constructor that wraps (not copies).Parameters: bag - the bag to decorate, must not be null lock - the lock to use, must not be null Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if bag or lock is null

### Method Detail

#### synchronizedBag public static <E> [SynchronizedBag](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)<E> synchronizedBag([Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<E> bag) Factory method to create a synchronized bag.Type Parameters: E - the type of the elements in the bag Parameters: bag - the bag to decorate, must not be null Returns: a new synchronized Bag Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if bag is null Since: 4.0

#### getBag protected [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> getBag() Gets the bag being decorated.Returns: the decorated bag

#### equals public boolean equals([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) object)Specified by: [equals](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#equals-java.lang.Object-) in interface [Collection](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> Overrides: [equals](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#equals-java.lang.Object-) in class [SynchronizedCollection](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)>

#### hashCode public int hashCode()Specified by: [hashCode](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#hashCode--) in interface [Collection](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> Overrides: [hashCode](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html#hashCode--) in class [SynchronizedCollection](http://docs.google.com/org/apache/commons/collections4/collection/SynchronizedCollection.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)>

#### add public boolean add([E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html) object, int count) Description copied from interface: [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html#add-E-int-) Adds nCopies copies of the specified object to the Bag. If the object is already in the [Bag.uniqueSet()](http://docs.google.com/org/apache/commons/collections4/Bag.html#uniqueSet--) then increment its count as reported by [Bag.getCount(Object)](http://docs.google.com/org/apache/commons/collections4/Bag.html#getCount-java.lang.Object-). Otherwise add it to the [Bag.uniqueSet()](http://docs.google.com/org/apache/commons/collections4/Bag.html#uniqueSet--) and report its count as nCopies.Specified by: [add](http://docs.google.com/org/apache/commons/collections4/Bag.html#add-E-int-) in interface [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> Parameters: object - the object to add count - the number of copies to add Returns: true if the object was not already in the uniqueSet

#### remove public boolean remove([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) object, int count) Description copied from interface: [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html#remove-java.lang.Object-int-) Removes nCopies copies of the specified object from the Bag. If the number of copies to remove is greater than the actual number of copies in the Bag, no error is thrown.Specified by: [remove](http://docs.google.com/org/apache/commons/collections4/Bag.html#remove-java.lang.Object-int-) in interface [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> Parameters: object - the object to remove count - the number of copies to remove Returns: true if this call changed the collection

#### uniqueSet public [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> uniqueSet() Description copied from interface: [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html#uniqueSet--) Returns a [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true) of unique elements in the Bag. Uniqueness constraints are the same as those in [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true).Specified by: [uniqueSet](http://docs.google.com/org/apache/commons/collections4/Bag.html#uniqueSet--) in interface [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> Returns: the Set of unique Bag elements

#### getCount public int getCount([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) object) Description copied from interface: [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html#getCount-java.lang.Object-) Returns the number of occurrences (cardinality) of the given object currently in the bag. If the object does not exist in the bag, return 0.Specified by: [getCount](http://docs.google.com/org/apache/commons/collections4/Bag.html#getCount-java.lang.Object-) in interface [Bag](http://docs.google.com/org/apache/commons/collections4/Bag.html)<[E](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedBag.html)> Parameters: object - the object to search for Returns: the number of occurrences of the object, zero if not found

[Skip navigation links](#3as4poj)

* [Overview](http://docs.google.com/overview-summary.html)
* [Package](http://docs.google.com/package-summary.html)
* Class
* [Use](http://docs.google.com/class-use/SynchronizedBag.html)
* [Tree](http://docs.google.com/package-tree.html)
* [Deprecated](http://docs.google.com/deprecated-list.html)
* [Index](http://docs.google.com/index-all.html)
* [Help](http://docs.google.com/help-doc.html)
* [Prev Class](http://docs.google.com/org/apache/commons/collections4/bag/PredicatedSortedBag.html)
* [Next Class](http://docs.google.com/org/apache/commons/collections4/bag/SynchronizedSortedBag.html)
* [Frames](http://docs.google.com/index.html?org/apache/commons/collections4/bag/SynchronizedBag.html)
* [No Frames](http://docs.google.com/SynchronizedBag.html)
* [All Classes](http://docs.google.com/allclasses-noframe.html)
* Summary:
* Nested |
* [Field](#2et92p0) |
* [Constr](#tyjcwt) |
* [Method](#3dy6vkm)
* Detail:
* Field |
* [Constr](#26in1rg) |
* [Method](#1ksv4uv)

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