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org.apache.commons.collections4.set

## Class PredicatedSortedSet<E>

* [java.lang.Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)
  + [org.apache.commons.collections4.collection.AbstractCollectionDecorator](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html)<E>
    - [org.apache.commons.collections4.collection.PredicatedCollection](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html)<E>
      * [org.apache.commons.collections4.set.PredicatedSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSet.html)<E>
        + org.apache.commons.collections4.set.PredicatedSortedSet<E>
* Type Parameters: E - the type of the elements in this set 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>, [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true)<E>, [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<E> Direct Known Subclasses: [PredicatedNavigableSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedNavigableSet.html)  
    
  public class PredicatedSortedSet<E>  
  extends [PredicatedSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSet.html)<E>  
  implements [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<E>  
  Decorates another SortedSet to validate that all additions match a specified predicate.  
  This set exists to provide validation for the decorated set. It is normally created to decorate an empty set. If an object cannot be added to the set, an IllegalArgumentException is thrown.  
  One usage would be to ensure that no null entries are added to the set.  
   SortedSet set =  
   PredicatedSortedSet.predicatedSortedSet(new TreeSet(),  
   NotNullPredicate.notNullPredicate());  
     
  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.set.PredicatedSortedSet)

### Nested Class Summary

### Nested classes/interfaces inherited from class org.apache.commons.collections4.collection.[**PredicatedCollection**](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html)[PredicatedCollection.Builder](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.Builder.html)<[E](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.Builder.html)>

### Field Summary

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

### Constructor SummaryConstructors

|  |  |
| --- | --- |
| * + Modifier | * + Constructor and Description |
| * + protected | * + [PredicatedSortedSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#PredicatedSortedSet-java.util.SortedSet-org.apache.commons.collections4.Predicate-)([SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> set, [Predicate](http://docs.google.com/org/apache/commons/collections4/Predicate.html)<? super [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> predicate) Constructor that wraps (not copies). |

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

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + [Comparator](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true)<? super [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> | * + [comparator](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#comparator--)() |
| * + protected [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> | * + [decorated](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#decorated--)() Gets the sorted set being decorated. |
| * + [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) | * + [first](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#first--)() |
| * + [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> | * + [headSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#headSet-E-)([E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) toElement) |
| * + [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) | * + [last](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#last--)() |
| * + static <E> [PredicatedSortedSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)<E> | * + [predicatedSortedSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#predicatedSortedSet-java.util.SortedSet-org.apache.commons.collections4.Predicate-)([SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<E> set, [Predicate](http://docs.google.com/org/apache/commons/collections4/Predicate.html)<? super E> predicate) Factory method to create a predicated (validating) sorted set. |
| * + [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> | * + [subSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#subSet-E-E-)([E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) fromElement, [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) toElement) |
| * + [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> | * + [tailSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html#tailSet-E-)([E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) fromElement) |

### Methods inherited from class org.apache.commons.collections4.set.[**PredicatedSet**](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSet.html)[equals](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSet.html#equals-java.lang.Object-), [hashCode](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSet.html#hashCode--), [predicatedSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSet.html#predicatedSet-java.util.Set-org.apache.commons.collections4.Predicate-)

### Methods inherited from class org.apache.commons.collections4.collection.[**PredicatedCollection**](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html)[add](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html#add-E-), [addAll](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html#addAll-java.util.Collection-), [builder](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html#builder-org.apache.commons.collections4.Predicate-), [notNullBuilder](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html#notNullBuilder--), [predicatedCollection](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html#predicatedCollection-java.util.Collection-org.apache.commons.collections4.Predicate-), [validate](http://docs.google.com/org/apache/commons/collections4/collection/PredicatedCollection.html#validate-E-)

### Methods inherited from class org.apache.commons.collections4.collection.[**AbstractCollectionDecorator**](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html)[clear](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#clear--), [contains](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#contains-java.lang.Object-), [containsAll](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#containsAll-java.util.Collection-), [isEmpty](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#isEmpty--), [iterator](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#iterator--), [remove](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#remove-java.lang.Object-), [removeAll](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#removeAll-java.util.Collection-), [removeIf](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#removeIf-java.util.function.Predicate-), [retainAll](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#retainAll-java.util.Collection-), [setCollection](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#setCollection-java.util.Collection-), [size](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#size--), [toArray](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#toArray--), [toArray](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.html#toArray-T:A-), [toString](http://docs.google.com/org/apache/commons/collections4/collection/AbstractCollectionDecorator.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 java.util.[**SortedSet**](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)[spliterator](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true#spliterator--)

### Methods inherited from interface java.util.[**Set**](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true)[add](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#add-E-), [addAll](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#addAll-java.util.Collection-), [clear](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#clear--), [contains](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#contains-java.lang.Object-), [containsAll](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#containsAll-java.util.Collection-), [equals](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#equals-java.lang.Object-), [hashCode](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#hashCode--), [isEmpty](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#isEmpty--), [iterator](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#iterator--), [remove](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#remove-java.lang.Object-), [removeAll](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#removeAll-java.util.Collection-), [retainAll](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#retainAll-java.util.Collection-), [size](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#size--), [toArray](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#toArray--), [toArray](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true#toArray-T:A-)

### Methods inherited from interface java.util.[**Collection**](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true)[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-), [stream](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true#stream--)

### 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

#### PredicatedSortedSet protected PredicatedSortedSet([SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> set, [Predicate](http://docs.google.com/org/apache/commons/collections4/Predicate.html)<? super [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> predicate) Constructor that wraps (not copies). If there are any elements already in the set being decorated, they are validated.Parameters: set - the set to decorate, must not be null predicate - the predicate to use for validation, must not be null Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if set or predicate is null [IllegalArgumentException](https://docs.oracle.com/javase/7/docs/api/java/lang/IllegalArgumentException.html?is-external=true) - if the set contains invalid elements

### Method Detail

#### predicatedSortedSet public static <E> [PredicatedSortedSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)<E> predicatedSortedSet([SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<E> set, [Predicate](http://docs.google.com/org/apache/commons/collections4/Predicate.html)<? super E> predicate) Factory method to create a predicated (validating) sorted set. If there are any elements already in the set being decorated, they are validated.Type Parameters: E - the element type Parameters: set - the set to decorate, must not be null predicate - the predicate to use for validation, must not be null Returns: a new predicated sorted set. Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if set or predicate is null [IllegalArgumentException](https://docs.oracle.com/javase/7/docs/api/java/lang/IllegalArgumentException.html?is-external=true) - if the set contains invalid elements Since: 4.0

#### decorated protected [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> decorated() Gets the sorted set being decorated.Overrides: [decorated](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSet.html#decorated--) in class [PredicatedSet](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSet.html)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> Returns: the decorated sorted set

#### comparator public [Comparator](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true)<? super [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> comparator()Specified by: [comparator](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true#comparator--) in interface [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)>

#### first public [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) first()Specified by: [first](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true#first--) in interface [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)>

#### last public [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) last()Specified by: [last](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true#last--) in interface [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)>

#### subSet public [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> subSet([E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) fromElement, [E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) toElement)Specified by: [subSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true#subSet-E-E-) in interface [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)>

#### headSet public [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> headSet([E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) toElement)Specified by: [headSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true#headSet-E-) in interface [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)>

#### tailSet public [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)> tailSet([E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html) fromElement)Specified by: [tailSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true#tailSet-E-) in interface [SortedSet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedSet.html?is-external=true)<[E](http://docs.google.com/org/apache/commons/collections4/set/PredicatedSortedSet.html)>

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