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org.apache.commons.collections4.map

## Class AbstractLinkedMap<K,V>

* [java.lang.Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)
  + [java.util.AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V>
    - [org.apache.commons.collections4.map.AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<K,V>
      * org.apache.commons.collections4.map.AbstractLinkedMap<K,V>
* Type Parameters: K - the type of the keys in this map V - the type of the values in this map All Implemented Interfaces: [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<K,V>, [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<K,V>, [IterableGet](http://docs.google.com/org/apache/commons/collections4/IterableGet.html)<K,V>, [IterableMap](http://docs.google.com/org/apache/commons/collections4/IterableMap.html)<K,V>, [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html)<K,V>, [Put](http://docs.google.com/org/apache/commons/collections4/Put.html)<K,V> Direct Known Subclasses: [LinkedMap](http://docs.google.com/org/apache/commons/collections4/map/LinkedMap.html), [LRUMap](http://docs.google.com/org/apache/commons/collections4/map/LRUMap.html)  
    
  public abstract class AbstractLinkedMap<K,V>  
  extends [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<K,V>  
  implements [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html)<K,V>  
  An abstract implementation of a hash-based map that links entries to create an ordered map and which provides numerous points for subclasses to override.  
  This class implements all the features necessary for a subclass linked hash-based map. Key-value entries are stored in instances of the LinkEntry class which can be overridden and replaced. The iterators can similarly be replaced, without the need to replace the KeySet, EntrySet and Values view classes.  
  Overridable methods are provided to change the default hashing behaviour, and to change how entries are added to and removed from the map. Hopefully, all you need for unusual subclasses is here.  
  This implementation maintains order by original insertion, but subclasses may work differently. The OrderedMap interface is implemented to provide access to bidirectional iteration and extra convenience methods.  
  The orderedMapIterator() method provides direct access to a bidirectional iterator. The iterators from the other views can also be cast to OrderedIterator if required.  
  All the available iterators can be reset back to the start by casting to ResettableIterator and calling reset().  
  The implementation is also designed to be subclassed, with lots of useful methods exposed.Since: 3.0

### Nested Class SummaryNested Classes

|  |  |
| --- | --- |
| * + Modifier and Type | * + Class and Description |
| * + protected static class | * + [AbstractLinkedMap.EntrySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.EntrySetIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.EntrySetIterator.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.EntrySetIterator.html)> EntrySet iterator. |
| * + protected static class | * + [AbstractLinkedMap.KeySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.KeySetIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.KeySetIterator.html)> KeySet iterator. |
| * + protected static class | * + [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)> LinkEntry that stores the data. |
| * + protected static class | * + [AbstractLinkedMap.LinkIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkIterator.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkIterator.html)> Base Iterator that iterates in link order. |
| * + protected static class | * + [AbstractLinkedMap.LinkMapIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkMapIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkMapIterator.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkMapIterator.html)> MapIterator implementation. |
| * + protected static class | * + [AbstractLinkedMap.ValuesIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.ValuesIterator.html)<[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.ValuesIterator.html)> Values iterator. |

### Nested classes/interfaces inherited from class org.apache.commons.collections4.map.[**AbstractHashedMap**](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)[AbstractHashedMap.EntrySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.EntrySet.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.EntrySet.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.EntrySet.html)>, [AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)>, [AbstractHashedMap.HashIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashIterator.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashIterator.html)>, [AbstractHashedMap.HashMapIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashMapIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashMapIterator.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashMapIterator.html)>, [AbstractHashedMap.KeySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.KeySet.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.KeySet.html)>, [AbstractHashedMap.Values](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.Values.html)<[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.Values.html)>

### Nested classes/interfaces inherited from class java.util.[**AbstractMap**](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)[AbstractMap.SimpleEntry](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.SimpleEntry.html?is-external=true)<[K](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.SimpleEntry.html?is-external=true),[V](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.SimpleEntry.html?is-external=true)>, [AbstractMap.SimpleImmutableEntry](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.SimpleImmutableEntry.html?is-external=true)<[K](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.SimpleImmutableEntry.html?is-external=true),[V](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.SimpleImmutableEntry.html?is-external=true)>

### Nested classes/interfaces inherited from interface java.util.[**Map**](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)[Map.Entry](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true)<[K](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true),[V](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true)>

### Field Summary

### Fields inherited from class org.apache.commons.collections4.map.[**AbstractHashedMap**](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)[DEFAULT\_CAPACITY](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#DEFAULT_CAPACITY), [DEFAULT\_LOAD\_FACTOR](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#DEFAULT_LOAD_FACTOR), [DEFAULT\_THRESHOLD](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#DEFAULT_THRESHOLD), [GETKEY\_INVALID](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#GETKEY_INVALID), [GETVALUE\_INVALID](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#GETVALUE_INVALID), [MAXIMUM\_CAPACITY](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#MAXIMUM_CAPACITY), [NO\_NEXT\_ENTRY](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#NO_NEXT_ENTRY), [NO\_PREVIOUS\_ENTRY](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#NO_PREVIOUS_ENTRY), [NULL](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#NULL), [REMOVE\_INVALID](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#REMOVE_INVALID), [SETVALUE\_INVALID](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#SETVALUE_INVALID)

### Constructor SummaryConstructors

|  |  |
| --- | --- |
| * + Modifier | * + Constructor and Description |
| * + protected | * + [AbstractLinkedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#AbstractLinkedMap--)() Constructor only used in deserialization, do not use otherwise. |
| * + protected | * + [AbstractLinkedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#AbstractLinkedMap-int-)(int initialCapacity) Constructs a new, empty map with the specified initial capacity. |
| * + protected | * + [AbstractLinkedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#AbstractLinkedMap-int-float-)(int initialCapacity, float loadFactor) Constructs a new, empty map with the specified initial capacity and load factor. |
| * + protected | * + [AbstractLinkedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#AbstractLinkedMap-int-float-int-)(int initialCapacity, float loadFactor, int threshold) Constructor which performs no validation on the passed in parameters. |
| * + protected | * + [AbstractLinkedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#AbstractLinkedMap-java.util.Map-)([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),? extends [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> map) Constructor copying elements from another map. |

### Method SummaryAll Methods Instance Methods Concrete Methods

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + protected void | * + [addEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#addEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-)([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entry, int hashIndex) Adds an entry into this map, maintaining insertion order. |
| * + void | * + [clear](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#clear--)() Clears the map, resetting the size to zero and nullifying references to avoid garbage collection issues. |
| * + boolean | * + [containsValue](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#containsValue-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) value) Checks whether the map contains the specified value. |
| * + protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> | * + [createEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#createEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-K-V-)([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> next, int hashCode, [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) key, [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) value) Creates an entry to store the data. |
| * + protected [Iterator](https://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html?is-external=true)<[Map.Entry](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)>> | * + [createEntrySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#createEntrySetIterator--)() Creates an entry set iterator. |
| * + protected [Iterator](https://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> | * + [createKeySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#createKeySetIterator--)() Creates a key set iterator. |
| * + protected [Iterator](https://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html?is-external=true)<[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> | * + [createValuesIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#createValuesIterator--)() Creates a values iterator. |
| * + protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> | * + [entryAfter](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#entryAfter-org.apache.commons.collections4.map.AbstractLinkedMap.LinkEntry-)([AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entry) Gets the after field from a LinkEntry. |
| * + protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> | * + [entryBefore](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#entryBefore-org.apache.commons.collections4.map.AbstractLinkedMap.LinkEntry-)([AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entry) Gets the before field from a LinkEntry. |
| * + [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) | * + [firstKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#firstKey--)() Gets the first key in the map, which is the first inserted. |
| * + protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> | * + [getEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#getEntry-int-)(int index) Gets the key at the specified index. |
| * + protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> | * + [getEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#getEntry-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Gets the entry mapped to the key specified. |
| * + protected void | * + [init](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#init--)() Initialise this subclass during construction. |
| * + [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) | * + [lastKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#lastKey--)() Gets the last key in the map, which is the most recently inserted. |
| * + [OrderedMapIterator](http://docs.google.com/org/apache/commons/collections4/OrderedMapIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> | * + [mapIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#mapIterator--)() Gets an iterator over the map. |
| * + [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) | * + [nextKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#nextKey-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Gets the next key in sequence. |
| * + [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) | * + [previousKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#previousKey-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Gets the previous key in sequence. |
| * + protected void | * + [removeEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html#removeEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-)([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entry, int hashIndex, [AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> previous) Removes an entry from the map and the linked list. |

### Methods inherited from class org.apache.commons.collections4.map.[**AbstractHashedMap**](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)[addMapping](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#addMapping-int-int-K-V-), [calculateNewCapacity](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#calculateNewCapacity-int-), [calculateThreshold](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#calculateThreshold-int-float-), [checkCapacity](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#checkCapacity--), [clone](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#clone--), [containsKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#containsKey-java.lang.Object-), [convertKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#convertKey-java.lang.Object-), [destroyEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#destroyEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-), [doReadObject](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#doReadObject-java.io.ObjectInputStream-), [doWriteObject](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#doWriteObject-java.io.ObjectOutputStream-), [ensureCapacity](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#ensureCapacity-int-), [entryHashCode](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#entryHashCode-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-), [entryKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#entryKey-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-), [entryNext](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#entryNext-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-), [entrySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#entrySet--), [entryValue](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#entryValue-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-), [equals](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#equals-java.lang.Object-), [get](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#get-java.lang.Object-), [hash](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#hash-java.lang.Object-), [hashCode](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#hashCode--), [hashIndex](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#hashIndex-int-int-), [isEmpty](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#isEmpty--), [isEqualKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#isEqualKey-java.lang.Object-java.lang.Object-), [isEqualValue](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#isEqualValue-java.lang.Object-java.lang.Object-), [keySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#keySet--), [put](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#put-K-V-), [putAll](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#putAll-java.util.Map-), [remove](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#remove-java.lang.Object-), [removeMapping](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#removeMapping-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-), [reuseEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#reuseEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-int-K-V-), [size](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#size--), [toString](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#toString--), [updateEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#updateEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-V-), [values](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#values--)

### Methods inherited from class java.lang.[**Object**](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)[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.[**Map**](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)[compute](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#compute-K-java.util.function.BiFunction-), [computeIfAbsent](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#computeIfAbsent-K-java.util.function.Function-), [computeIfPresent](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#computeIfPresent-K-java.util.function.BiFunction-), [containsKey](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#containsKey-java.lang.Object-), [entrySet](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#entrySet--), [equals](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#equals-java.lang.Object-), [forEach](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#forEach-java.util.function.BiConsumer-), [get](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#get-java.lang.Object-), [getOrDefault](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#getOrDefault-java.lang.Object-V-), [hashCode](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#hashCode--), [isEmpty](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#isEmpty--), [keySet](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#keySet--), [merge](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#merge-K-V-java.util.function.BiFunction-), [put](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#put-K-V-), [putAll](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#putAll-java.util.Map-), [putIfAbsent](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#putIfAbsent-K-V-), [remove](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#remove-java.lang.Object-), [remove](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#remove-java.lang.Object-java.lang.Object-), [replace](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#replace-K-V-), [replace](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#replace-K-V-V-), [replaceAll](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#replaceAll-java.util.function.BiFunction-), [size](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#size--), [values](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#values--)

### Methods inherited from interface org.apache.commons.collections4.[**Put**](http://docs.google.com/org/apache/commons/collections4/Put.html)[put](http://docs.google.com/org/apache/commons/collections4/Put.html#put-K-V-), [putAll](http://docs.google.com/org/apache/commons/collections4/Put.html#putAll-java.util.Map-)

### Methods inherited from interface org.apache.commons.collections4.[**Get**](http://docs.google.com/org/apache/commons/collections4/Get.html)[containsKey](http://docs.google.com/org/apache/commons/collections4/Get.html#containsKey-java.lang.Object-), [entrySet](http://docs.google.com/org/apache/commons/collections4/Get.html#entrySet--), [get](http://docs.google.com/org/apache/commons/collections4/Get.html#get-java.lang.Object-), [isEmpty](http://docs.google.com/org/apache/commons/collections4/Get.html#isEmpty--), [keySet](http://docs.google.com/org/apache/commons/collections4/Get.html#keySet--), [remove](http://docs.google.com/org/apache/commons/collections4/Get.html#remove-java.lang.Object-), [size](http://docs.google.com/org/apache/commons/collections4/Get.html#size--), [values](http://docs.google.com/org/apache/commons/collections4/Get.html#values--)

### Constructor Detail

#### AbstractLinkedMap protected AbstractLinkedMap() Constructor only used in deserialization, do not use otherwise.

#### AbstractLinkedMap protected AbstractLinkedMap(int initialCapacity, float loadFactor, int threshold) Constructor which performs no validation on the passed in parameters.Parameters: initialCapacity - the initial capacity, must be a power of two loadFactor - the load factor, must be > 0.0f and generally < 1.0f threshold - the threshold, must be sensible

#### AbstractLinkedMap protected AbstractLinkedMap(int initialCapacity) Constructs a new, empty map with the specified initial capacity.Parameters: initialCapacity - the initial capacity Throws: [IllegalArgumentException](https://docs.oracle.com/javase/7/docs/api/java/lang/IllegalArgumentException.html?is-external=true) - if the initial capacity is negative

#### AbstractLinkedMap protected AbstractLinkedMap(int initialCapacity, float loadFactor) Constructs a new, empty map with the specified initial capacity and load factor.Parameters: initialCapacity - the initial capacity loadFactor - the load factor Throws: [IllegalArgumentException](https://docs.oracle.com/javase/7/docs/api/java/lang/IllegalArgumentException.html?is-external=true) - if the initial capacity is negative [IllegalArgumentException](https://docs.oracle.com/javase/7/docs/api/java/lang/IllegalArgumentException.html?is-external=true) - if the load factor is less than zero

#### AbstractLinkedMap protected AbstractLinkedMap([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),? extends [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> map) Constructor copying elements from another map.Parameters: map - the map to copy Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the map is null

### Method Detail

#### init protected void init() Initialise this subclass during construction. NOTE: As from v3.2 this method calls [AbstractHashedMap.createEntry(HashEntry, int, Object, Object)](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#createEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-K-V-) to create the map entry object.Overrides: [init](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#init--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)>

#### containsValue public boolean containsValue([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) value) Checks whether the map contains the specified value.Specified by: [containsValue](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#containsValue-java.lang.Object-) in interface [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Specified by: [containsValue](http://docs.google.com/org/apache/commons/collections4/Get.html#containsValue-java.lang.Object-) in interface [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Overrides: [containsValue](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#containsValue-java.lang.Object-) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Parameters: value - the value to search for Returns: true if the map contains the value See Also: [Map.containsValue(Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#containsValue-java.lang.Object-)

#### clear public void clear() Clears the map, resetting the size to zero and nullifying references to avoid garbage collection issues.Specified by: [clear](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#clear--) in interface [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Specified by: [clear](http://docs.google.com/org/apache/commons/collections4/Put.html#clear--) in interface [Put](http://docs.google.com/org/apache/commons/collections4/Put.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Overrides: [clear](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#clear--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> See Also: [Map.clear()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#clear--)

#### firstKey public [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) firstKey() Gets the first key in the map, which is the first inserted.Specified by: [firstKey](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#firstKey--) in interface [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Returns: the eldest key

#### lastKey public [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) lastKey() Gets the last key in the map, which is the most recently inserted.Specified by: [lastKey](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#lastKey--) in interface [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Returns: the most recently inserted key

#### nextKey public [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) nextKey([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Gets the next key in sequence.Specified by: [nextKey](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#nextKey-K-) in interface [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Parameters: key - the key to get after Returns: the next key

#### getEntry protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> getEntry([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Description copied from class: [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#getEntry-java.lang.Object-) Gets the entry mapped to the key specified. This method exists for subclasses that may need to perform a multi-step process accessing the entry. The public methods in this class don't use this method to gain a small performance boost.Overrides: [getEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#getEntry-java.lang.Object-) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Parameters: key - the key Returns: the entry, null if no match

#### previousKey public [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) previousKey([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Gets the previous key in sequence.Specified by: [previousKey](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#previousKey-K-) in interface [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Parameters: key - the key to get before Returns: the previous key

#### getEntry protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> getEntry(int index) Gets the key at the specified index.Parameters: index - the index to retrieve Returns: the key at the specified index Throws: [IndexOutOfBoundsException](https://docs.oracle.com/javase/7/docs/api/java/lang/IndexOutOfBoundsException.html?is-external=true) - if the index is invalid

#### addEntry protected void addEntry([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entry, int hashIndex) Adds an entry into this map, maintaining insertion order. This implementation adds the entry to the data storage table and to the end of the linked list.Overrides: [addEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#addEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Parameters: entry - the entry to add hashIndex - the index into the data array to store at

#### createEntry protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> createEntry([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> next, int hashCode, [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) key, [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html) value) Creates an entry to store the data. This implementation creates a new LinkEntry instance.Overrides: [createEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#createEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-K-V-) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Parameters: next - the next entry in sequence hashCode - the hash code to use key - the key to store value - the value to store Returns: the newly created entry

#### removeEntry protected void removeEntry([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entry, int hashIndex, [AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> previous) Removes an entry from the map and the linked list. This implementation removes the entry from the linked list chain, then calls the superclass implementation.Overrides: [removeEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#removeEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Parameters: entry - the entry to remove hashIndex - the index into the data structure previous - the previous entry in the chain

#### entryBefore protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entryBefore([AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entry) Gets the before field from a LinkEntry. Used in subclasses that have no visibility of the field.Parameters: entry - the entry to query, must not be null Returns: the before field of the entry Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the entry is null Since: 3.1

#### entryAfter protected [AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entryAfter([AbstractLinkedMap.LinkEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.LinkEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> entry) Gets the after field from a LinkEntry. Used in subclasses that have no visibility of the field.Parameters: entry - the entry to query, must not be null Returns: the after field of the entry Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the entry is null Since: 3.1

#### mapIterator public [OrderedMapIterator](http://docs.google.com/org/apache/commons/collections4/OrderedMapIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> mapIterator() Gets an iterator over the map. Changes made to the iterator affect this map. A MapIterator returns the keys in the map. It also provides convenient methods to get the key and value, and set the value. It avoids the need to create an entrySet/keySet/values object. It also avoids creating the Map.Entry object.Specified by: [mapIterator](http://docs.google.com/org/apache/commons/collections4/IterableGet.html#mapIterator--) in interface [IterableGet](http://docs.google.com/org/apache/commons/collections4/IterableGet.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Specified by: [mapIterator](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#mapIterator--) in interface [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Overrides: [mapIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#mapIterator--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Returns: the map iterator

#### createEntrySetIterator protected [Iterator](https://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html?is-external=true)<[Map.Entry](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)>> createEntrySetIterator() Creates an entry set iterator. Subclasses can override this to return iterators with different properties.Overrides: [createEntrySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#createEntrySetIterator--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Returns: the entrySet iterator

#### createKeySetIterator protected [Iterator](https://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> createKeySetIterator() Creates a key set iterator. Subclasses can override this to return iterators with different properties.Overrides: [createKeySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#createKeySetIterator--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Returns: the keySet iterator

#### createValuesIterator protected [Iterator](https://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html?is-external=true)<[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> createValuesIterator() Creates a values iterator. Subclasses can override this to return iterators with different properties.Overrides: [createValuesIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#createValuesIterator--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractLinkedMap.html)> Returns: the values iterator

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