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org.apache.commons.collections4.map

## Class AbstractReferenceMap<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.AbstractReferenceMap<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>, [Put](http://docs.google.com/org/apache/commons/collections4/Put.html)<K,V> Direct Known Subclasses: [ReferenceIdentityMap](http://docs.google.com/org/apache/commons/collections4/map/ReferenceIdentityMap.html), [ReferenceMap](http://docs.google.com/org/apache/commons/collections4/map/ReferenceMap.html)  
    
  public abstract class AbstractReferenceMap<K,V>  
  extends [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<K,V>  
  An abstract implementation of a hash-based map that allows the entries to be removed by the garbage collector.  
  This class implements all the features necessary for a subclass reference hash-based map. Key-value entries are stored in instances of the ReferenceEntry 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.  
  When you construct an AbstractReferenceMap, you can specify what kind of references are used to store the map's keys and values. If non-hard references are used, then the garbage collector can remove mappings if a key or value becomes unreachable, or if the JVM's memory is running low. For information on how the different reference types behave, see [Reference](https://docs.oracle.com/javase/7/docs/api/java/lang/ref/Reference.html?is-external=true).  
  Different types of references can be specified for keys and values. The keys can be configured to be weak but the values hard, in which case this class will behave like a  [WeakHashMap](http://java.sun.com/j2se/1.4/docs/api/java/util/WeakHashMap.html). However, you can also specify hard keys and weak values, or any other combination. The default constructor uses hard keys and soft values, providing a memory-sensitive cache.  
  This [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true) implementation does *not* allow null elements. Attempting to add a null key or value to the map will raise a NullPointerException.  
  All the available iterators can be reset back to the start by casting to ResettableIterator and calling reset().  
  This implementation is not synchronized. You can use [Collections.synchronizedMap(java.util.Map<K, V>)](https://docs.oracle.com/javase/7/docs/api/java/util/Collections.html?is-external=true#synchronizedMap-java.util.Map-) to provide synchronized access to a ReferenceMap.Since: 3.1 (extracted from ReferenceMap in 3.0) See Also: [Reference](https://docs.oracle.com/javase/7/docs/api/java/lang/ref/Reference.html?is-external=true)

### Nested Class SummaryNested Classes

|  |  |
| --- | --- |
| * + Modifier and Type | * + Class and Description |
| * + protected static class | * + [AbstractReferenceMap.ReferenceEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceEntry.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceEntry.html)> A MapEntry implementation for the map. |
| * + static class | * + [AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) Reference type enum. |

### 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.EntrySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.EntrySetIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.EntrySetIterator.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.EntrySetIterator.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.KeySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.KeySetIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.KeySetIterator.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)>, [AbstractHashedMap.ValuesIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.ValuesIterator.html)<[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.ValuesIterator.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 | * + [AbstractReferenceMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#AbstractReferenceMap--)() Constructor used during deserialization. |
| * + protected | * + [AbstractReferenceMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#AbstractReferenceMap-org.apache.commons.collections4.map.AbstractReferenceMap.ReferenceStrength-org.apache.commons.collections4.map.AbstractReferenceMap.ReferenceStrength-int-float-boolean-)([AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) keyType, [AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) valueType, int capacity, float loadFactor, boolean purgeValues) Constructs a new empty map with the specified reference types, load factor and initial capacity. |

### Method SummaryAll Methods Instance Methods Concrete Methods

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + void | * + [clear](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#clear--)() Clears this map. |
| * + boolean | * + [containsKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#containsKey-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Checks whether the map contains the specified key. |
| * + boolean | * + [containsValue](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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 [AbstractReferenceMap.ReferenceEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> | * + [createEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> next, int hashCode, [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) key, [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) value) Creates a ReferenceEntry instead of a HashEntry. |
| * + 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)>> | * + [createEntrySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html)> | * + [createKeySetIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#createKeySetIterator--)() Creates an 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/AbstractReferenceMap.html)> | * + [createValuesIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#createValuesIterator--)() Creates an values iterator. |
| * + protected void | * + [doReadObject](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#doReadObject-java.io.ObjectInputStream-)([ObjectInputStream](https://docs.oracle.com/javase/7/docs/api/java/io/ObjectInputStream.html?is-external=true) in) Replaces the superclass method to read the state of this class. |
| * + protected void | * + [doWriteObject](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#doWriteObject-java.io.ObjectOutputStream-)([ObjectOutputStream](https://docs.oracle.com/javase/7/docs/api/java/io/ObjectOutputStream.html?is-external=true) out) Replaces the superclass method to store the state of this class. |
| * + [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)>> | * + [entrySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#entrySet--)() Returns a set view of this map's entries. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) | * + [get](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#get-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Gets the value mapped to the key specified. |
| * + protected [AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> | * + [getEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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 int | * + [hashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#hashEntry-java.lang.Object-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) value) Gets the hash code for a MapEntry. |
| * + protected void | * + [init](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#init--)() Initialise this subclass during construction, cloning or deserialization. |
| * + boolean | * + [isEmpty](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#isEmpty--)() Checks whether the map is currently empty. |
| * + protected boolean | * + [isEqualKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#isEqualKey-java.lang.Object-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key1, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key2) Compares two keys, in internal converted form, to see if they are equal. |
| * + protected boolean | * + [isKeyType](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#isKeyType-org.apache.commons.collections4.map.AbstractReferenceMap.ReferenceStrength-)([AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) type) Provided protected read-only access to the key type. |
| * + protected boolean | * + [isValueType](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#isValueType-org.apache.commons.collections4.map.AbstractReferenceMap.ReferenceStrength-)([AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) type) Provided protected read-only access to the value type. |
| * + [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> | * + [keySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#keySet--)() Returns a set view of this map's keys. |
| * + [MapIterator](http://docs.google.com/org/apache/commons/collections4/MapIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> | * + [mapIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#mapIterator--)() Gets a MapIterator over the reference map. |
| * + protected void | * + [purge](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#purge--)() Purges stale mappings from this map. |
| * + protected void | * + [purge](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#purge-java.lang.ref.Reference-)([Reference](https://docs.oracle.com/javase/7/docs/api/java/lang/ref/Reference.html?is-external=true)<?> ref) Purges the specified reference. |
| * + protected void | * + [purgeBeforeRead](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#purgeBeforeRead--)() Purges stale mappings from this map before read operations. |
| * + protected void | * + [purgeBeforeWrite](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#purgeBeforeWrite--)() Purges stale mappings from this map before write operations. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) | * + [put](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#put-K-V-)([K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) key, [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) value) Puts a key-value mapping into this map. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) | * + [remove](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#remove-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Removes the specified mapping from this map. |
| * + int | * + [size](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#size--)() Gets the size of the map. |
| * + [Collection](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true)<[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> | * + [values](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#values--)() Returns a collection view of this map's values. |

### Methods inherited from class org.apache.commons.collections4.map.[**AbstractHashedMap**](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)[addEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#addEntry-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-int-), [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--), [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-), [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-), [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-), [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-), [isEqualValue](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#isEqualValue-java.lang.Object-java.lang.Object-), [putAll](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#putAll-java.util.Map-), [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-), [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-), [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-)

### 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-), [forEach](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#forEach-java.util.function.BiConsumer-), [getOrDefault](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#getOrDefault-java.lang.Object-V-), [merge](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#merge-K-V-java.util.function.BiFunction-), [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-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-)

### Constructor Detail

#### AbstractReferenceMap protected AbstractReferenceMap() Constructor used during deserialization.

#### AbstractReferenceMap protected AbstractReferenceMap([AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) keyType, [AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) valueType, int capacity, float loadFactor, boolean purgeValues) Constructs a new empty map with the specified reference types, load factor and initial capacity.Parameters: keyType - the type of reference to use for keys; must be [HARD](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html#HARD), [SOFT](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html#SOFT), [WEAK](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html#WEAK) valueType - the type of reference to use for values; must be [AbstractReferenceMap.ReferenceStrength.HARD](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html#HARD), [SOFT](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html#SOFT), [WEAK](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html#WEAK) capacity - the initial capacity for the map loadFactor - the load factor for the map purgeValues - should the value be automatically purged when the key is garbage collected

### Method Detail

#### init protected void init() Initialise this subclass during construction, cloning or deserialization.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)>

#### size public int size() Gets the size of the map.Specified by: [size](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#size--) 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Specified by: [size](http://docs.google.com/org/apache/commons/collections4/Get.html#size--) in interface [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Overrides: [size](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#size--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Returns: the size See Also: [Map.size()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#size--)

#### isEmpty public boolean isEmpty() Checks whether the map is currently empty.Specified by: [isEmpty](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#isEmpty--) 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Specified by: [isEmpty](http://docs.google.com/org/apache/commons/collections4/Get.html#isEmpty--) in interface [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Overrides: [isEmpty](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#isEmpty--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Returns: true if the map is currently size zero See Also: [Map.isEmpty()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#isEmpty--)

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

#### 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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-)

#### get public [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) get([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Gets the value mapped to the key specified.Specified by: [get](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#get-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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Specified by: [get](http://docs.google.com/org/apache/commons/collections4/Get.html#get-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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Overrides: [get](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#get-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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Parameters: key - the key Returns: the mapped value, null if no match See Also: [Map.get(Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#get-java.lang.Object-)

#### put public [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) put([K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) key, [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) value) Puts a key-value mapping into this map. Neither the key nor the value may be null.Specified by: [put](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#put-K-V-) 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Specified by: [put](http://docs.google.com/org/apache/commons/collections4/Put.html#put-K-V-) in interface [Put](http://docs.google.com/org/apache/commons/collections4/Put.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Overrides: [put](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#put-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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Parameters: key - the key to add, must not be null value - the value to add, must not be null Returns: the value previously mapped to this key, null if none Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if either the key or value is null See Also: [Map.put(Object, Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#put-K-V-)

#### remove public [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) remove([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key) Removes the specified mapping from this map.Specified by: [remove](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#remove-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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Specified by: [remove](http://docs.google.com/org/apache/commons/collections4/Get.html#remove-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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Overrides: [remove](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#remove-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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Parameters: key - the mapping to remove Returns: the value mapped to the removed key, null if key not in map See Also: [Map.remove(Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#remove-java.lang.Object-)

#### clear public void clear() Clears this map.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> See Also: [Map.clear()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#clear--)

#### mapIterator public [MapIterator](http://docs.google.com/org/apache/commons/collections4/MapIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> mapIterator() Gets a MapIterator over the reference map. The iterator only returns valid key/value pairs.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Returns: a map iterator

#### entrySet public [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)>> entrySet() Returns a set view of this map's entries. An iterator returned entry is valid until next() is called again. The setValue() method on the toArray entries has no effect.Specified by: [entrySet](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#entrySet--) 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Specified by: [entrySet](http://docs.google.com/org/apache/commons/collections4/Get.html#entrySet--) in interface [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Overrides: [entrySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#entrySet--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Returns: a set view of this map's entries See Also: [Map.entrySet()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#entrySet--)

#### keySet public [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> keySet() Returns a set view of this map's keys.Specified by: [keySet](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#keySet--) 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Specified by: [keySet](http://docs.google.com/org/apache/commons/collections4/Get.html#keySet--) in interface [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Overrides: [keySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#keySet--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Returns: a set view of this map's keys See Also: [Map.keySet()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#keySet--)

#### values public [Collection](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true)<[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> values() Returns a collection view of this map's values.Specified by: [values](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#values--) 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Specified by: [values](http://docs.google.com/org/apache/commons/collections4/Get.html#values--) in interface [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Overrides: [values](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#values--) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Returns: a set view of this map's values See Also: [Map.values()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#values--)

#### purgeBeforeRead protected void purgeBeforeRead() Purges stale mappings from this map before read operations. This implementation calls [purge()](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#purge--) to maintain a consistent state.

#### purgeBeforeWrite protected void purgeBeforeWrite() Purges stale mappings from this map before write operations. This implementation calls [purge()](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html#purge--) to maintain a consistent state.

#### purge protected void purge() Purges stale mappings from this map. Note that this method is not synchronized! Special care must be taken if, for instance, you want stale mappings to be removed on a periodic basis by some background thread.

#### purge protected void purge([Reference](https://docs.oracle.com/javase/7/docs/api/java/lang/ref/Reference.html?is-external=true)<?> ref) Purges the specified reference.Parameters: ref - the reference to purge

#### getEntry protected [AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> getEntry([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.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Parameters: key - the key Returns: the entry, null if no match

#### hashEntry protected int hashEntry([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) value) Gets the hash code for a MapEntry. Subclasses can override this, for example to use the identityHashCode.Parameters: key - the key to get a hash code for, may be null value - the value to get a hash code for, may be null Returns: the hash code, as per the MapEntry specification

#### isEqualKey protected boolean isEqualKey([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key1, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key2) Compares two keys, in internal converted form, to see if they are equal. This implementation converts the key from the entry to a real reference before comparison.Overrides: [isEqualKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#isEqualKey-java.lang.Object-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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Parameters: key1 - the first key to compare passed in from outside key2 - the second key extracted from the entry via entry.key Returns: true if equal

#### createEntry protected [AbstractReferenceMap.ReferenceEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceEntry.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> next, int hashCode, [K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) key, [V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html) value) Creates a ReferenceEntry instead of a HashEntry.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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

#### 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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)>> createEntrySetIterator() Creates an entry set iterator.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html)> createKeySetIterator() Creates an key set iterator.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.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/AbstractReferenceMap.html)> createValuesIterator() Creates an values iterator.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/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Returns: the values iterator

#### doWriteObject protected void doWriteObject([ObjectOutputStream](https://docs.oracle.com/javase/7/docs/api/java/io/ObjectOutputStream.html?is-external=true) out) throws [IOException](https://docs.oracle.com/javase/7/docs/api/java/io/IOException.html?is-external=true) Replaces the superclass method to store the state of this class. Serialization is not one of the JDK's nicest topics. Normal serialization will initialise the superclass before the subclass. Sometimes however, this isn't what you want, as in this case the put() method on read can be affected by subclass state. The solution adopted here is to serialize the state data of this class in this protected method. This method must be called by the writeObject() of the first serializable subclass. Subclasses may override if they have a specific field that must be present on read before this implementation will work. Generally, the read determines what must be serialized here, if anything.Overrides: [doWriteObject](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#doWriteObject-java.io.ObjectOutputStream-) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Parameters: out - the output stream Throws: [IOException](https://docs.oracle.com/javase/7/docs/api/java/io/IOException.html?is-external=true) - if an error occurs while writing to the stream

#### doReadObject protected void doReadObject([ObjectInputStream](https://docs.oracle.com/javase/7/docs/api/java/io/ObjectInputStream.html?is-external=true) in) throws [IOException](https://docs.oracle.com/javase/7/docs/api/java/io/IOException.html?is-external=true), [ClassNotFoundException](https://docs.oracle.com/javase/7/docs/api/java/lang/ClassNotFoundException.html?is-external=true) Replaces the superclass method to read the state of this class. Serialization is not one of the JDK's nicest topics. Normal serialization will initialise the superclass before the subclass. Sometimes however, this isn't what you want, as in this case the put() method on read can be affected by subclass state. The solution adopted here is to deserialize the state data of this class in this protected method. This method must be called by the readObject() of the first serializable subclass. Subclasses may override if the subclass has a specific field that must be present before put() or calculateThreshold() will work correctly.Overrides: [doReadObject](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html#doReadObject-java.io.ObjectInputStream-) in class [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.html)> Parameters: in - the input stream Throws: [IOException](https://docs.oracle.com/javase/7/docs/api/java/io/IOException.html?is-external=true) - if an error occurs while reading from the stream [ClassNotFoundException](https://docs.oracle.com/javase/7/docs/api/java/lang/ClassNotFoundException.html?is-external=true) - if an object read from the stream can not be loaded

#### isKeyType protected boolean isKeyType([AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) type) Provided protected read-only access to the key type.Parameters: type - the type to check against. Returns: true if keyType has the specified type

#### isValueType protected boolean isValueType([AbstractReferenceMap.ReferenceStrength](http://docs.google.com/org/apache/commons/collections4/map/AbstractReferenceMap.ReferenceStrength.html) type) Provided protected read-only access to the value type.Parameters: type - the type to check against. Returns: true if valueType has the specified type

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