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org.apache.commons.collections4.map

## Class MultiKeyMap<K,V>

* [java.lang.Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)
  + [org.apache.commons.collections4.map.AbstractIterableMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractIterableMap.html)<K,V>
    - [org.apache.commons.collections4.map.AbstractMapDecorator](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V>
      * org.apache.commons.collections4.map.MultiKeyMap<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: [Serializable](https://docs.oracle.com/javase/7/docs/api/java/io/Serializable.html?is-external=true), [Cloneable](https://docs.oracle.com/javase/7/docs/api/java/lang/Cloneable.html?is-external=true), [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V>, [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V>, [IterableGet](http://docs.google.com/org/apache/commons/collections4/IterableGet.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V>, [IterableMap](http://docs.google.com/org/apache/commons/collections4/IterableMap.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V>, [Put](http://docs.google.com/org/apache/commons/collections4/Put.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V>  
    
  public class MultiKeyMap<K,V>  
  extends [AbstractMapDecorator](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V>  
  implements [Serializable](https://docs.oracle.com/javase/7/docs/api/java/io/Serializable.html?is-external=true), [Cloneable](https://docs.oracle.com/javase/7/docs/api/java/lang/Cloneable.html?is-external=true)
* A Map implementation that uses multiple keys to map the value.  
  This class is the most efficient way to uses multiple keys to map to a value. The best way to use this class is via the additional map-style methods. These provide get, containsKey, put and remove for individual keys which operate without extra object creation.  
  The additional methods are the main interface of this map. As such, you will not normally hold this map in a variable of type Map.  
  The normal map methods take in and return a [MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html). If you try to use put() with any other object type a ClassCastException is thrown. If you try to use null as the key in put() a NullPointerException is thrown.  
  This map is implemented as a decorator of a AbstractHashedMap which enables extra behaviour to be added easily.
  + MultiKeyMap.decorate(new LinkedMap()) creates an ordered map.
  + MultiKeyMap.decorate(new LRUMap()) creates an least recently used map.
  + MultiKeyMap.decorate(new ReferenceMap()) creates a garbage collector sensitive map.

Note that IdentityMap and ReferenceIdentityMap are unsuitable for use as the key comparison would work on the whole MultiKey, not the elements within.  
As an example, consider a least recently used cache that uses a String airline code and a Locale to lookup the airline's name:  
 private MultiKeyMap cache = MultiKeyMap.multiKeyMap(new LRUMap(50));  
  
 public String getAirlineName(String code, String locale) {  
 String name = (String) cache.get(code, locale);  
 if (name == null) {  
 name = getAirlineNameFromDB(code, locale);  
 cache.put(code, locale, name);  
 }  
 return name;  
 }  
   
**Note that MultiKeyMap is not synchronized and is not thread-safe.** If you wish to use this map from multiple threads concurrently, you must use appropriate synchronization. This class may throw exceptions when accessed by concurrent threads without synchronization.Since: 3.1 See Also: [Serialized Form](http://docs.google.com/serialized-form.html#org.apache.commons.collections4.map.MultiKeyMap)

### Nested Class Summary

### 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)>

### Constructor SummaryConstructors

|  |  |
| --- | --- |
| * + Modifier | * + Constructor and Description |
|  | * + [MultiKeyMap](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#MultiKeyMap--)() Constructs a new MultiKeyMap that decorates a HashedMap. |
| * + protected | * + [MultiKeyMap](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#MultiKeyMap-org.apache.commons.collections4.map.AbstractHashedMap-)([AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> map) Constructor that decorates the specified map and is called from [multiKeyMap(AbstractHashedMap)](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#multiKeyMap-org.apache.commons.collections4.map.AbstractHashedMap-). |

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

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + protected void | * + [checkKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#checkKey-org.apache.commons.collections4.keyvalue.MultiKey-)([MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<?> key) Check to ensure that input keys are valid MultiKey objects. |
| * + [MultiKeyMap](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> | * + [clone](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#clone--)() Clones the map without cloning the keys or values. |
| * + boolean | * + [containsKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#containsKey-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) Checks whether the map contains the specified multi-key. |
| * + boolean | * + [containsKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#containsKey-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Checks whether the map contains the specified multi-key. |
| * + boolean | * + [containsKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#containsKey-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Checks whether the map contains the specified multi-key. |
| * + boolean | * + [containsKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#containsKey-java.lang.Object-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Checks whether the map contains the specified multi-key. |
| * + protected [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> | * + [decorated](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#decorated--)() Gets the map being decorated. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [get](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#get-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) Gets the value mapped to the specified multi-key. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [get](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#get-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Gets the value mapped to the specified multi-key. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [get](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#get-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Gets the value mapped to the specified multi-key. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [get](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#get-java.lang.Object-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Gets the value mapped to the specified multi-key. |
| * + protected int | * + [hash](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#hash-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) Gets the hash code for the specified multi-key. |
| * + protected int | * + [hash](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#hash-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Gets the hash code for the specified multi-key. |
| * + protected int | * + [hash](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#hash-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Gets the hash code for the specified multi-key. |
| * + protected int | * + [hash](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#hash-java.lang.Object-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Gets the hash code for the specified multi-key. |
| * + protected boolean | * + [isEqualKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#isEqualKey-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-java.lang.Object-java.lang.Object-)([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> entry, [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) Is the key equal to the combined key. |
| * + protected boolean | * + [isEqualKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#isEqualKey-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-java.lang.Object-java.lang.Object-java.lang.Object-)([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> entry, [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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Is the key equal to the combined key. |
| * + protected boolean | * + [isEqualKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#isEqualKey-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-java.lang.Object-java.lang.Object-java.lang.Object-java.lang.Object-)([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> entry, [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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Is the key equal to the combined key. |
| * + protected boolean | * + [isEqualKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#isEqualKey-org.apache.commons.collections4.map.AbstractHashedMap.HashEntry-java.lang.Object-java.lang.Object-java.lang.Object-java.lang.Object-java.lang.Object-)([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> entry, [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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Is the key equal to the combined key. |
| * + [MapIterator](http://docs.google.com/org/apache/commons/collections4/MapIterator.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> | * + [mapIterator](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#mapIterator--)() Obtains a MapIterator over the map. |
| * + static <K,V> [MultiKeyMap](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)<K,V> | * + [multiKeyMap](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#multiKeyMap-org.apache.commons.collections4.map.AbstractHashedMap-)([AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V> map) Decorates the specified map to add the MultiKeyMap API and fast query. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [put](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#put-K-K-K-K-K-V-)([K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key1, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key2, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key3, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key4, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key5, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Stores the value against the specified multi-key. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [put](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#put-K-K-K-K-V-)([K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key1, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key2, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key3, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key4, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Stores the value against the specified multi-key. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [put](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#put-K-K-K-V-)([K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key1, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key2, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key3, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Stores the value against the specified multi-key. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [put](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#put-K-K-V-)([K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key1, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key2, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Stores the value against the specified multi-key. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [put](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#put-org.apache.commons.collections4.keyvalue.MultiKey-V-)([MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> key, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Puts the key and value into the map, where the key must be a non-null MultiKey object. |
| * + void | * + [putAll](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#putAll-java.util.Map-)([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,? extends [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> mapToCopy) Copies all of the keys and values from the specified map to this map. |
| * + boolean | * + [removeAll](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#removeAll-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key1) Removes all mappings where the first key is that specified. |
| * + boolean | * + [removeAll](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#removeAll-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) Removes all mappings where the first two keys are those specified. |
| * + boolean | * + [removeAll](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#removeAll-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Removes all mappings where the first three keys are those specified. |
| * + boolean | * + [removeAll](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#removeAll-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Removes all mappings where the first four keys are those specified. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [removeMultiKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#removeMultiKey-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) Removes the specified multi-key from this map. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [removeMultiKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#removeMultiKey-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Removes the specified multi-key from this map. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [removeMultiKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#removeMultiKey-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Removes the specified multi-key from this map. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) | * + [removeMultiKey](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#removeMultiKey-java.lang.Object-java.lang.Object-java.lang.Object-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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Removes the specified multi-key from this map. |

### Methods inherited from class org.apache.commons.collections4.map.[**AbstractMapDecorator**](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html)[clear](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#clear--), [containsKey](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#containsKey-java.lang.Object-), [containsValue](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#containsValue-java.lang.Object-), [entrySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#entrySet--), [equals](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#equals-java.lang.Object-), [get](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#get-java.lang.Object-), [hashCode](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#hashCode--), [isEmpty](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#isEmpty--), [keySet](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#keySet--), [remove](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#remove-java.lang.Object-), [size](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#size--), [toString](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#toString--), [values](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.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-), [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

#### MultiKeyMap public MultiKeyMap() Constructs a new MultiKeyMap that decorates a HashedMap.

#### MultiKeyMap protected MultiKeyMap([AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> map) Constructor that decorates the specified map and is called from [multiKeyMap(AbstractHashedMap)](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html#multiKeyMap-org.apache.commons.collections4.map.AbstractHashedMap-). The map must not be null and should be empty or only contain valid keys. This constructor performs no validation.Parameters: map - the map to decorate

### Method Detail

#### multiKeyMap public static <K,V> [MultiKeyMap](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)<K,V> multiKeyMap([AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends K>,V> map) Decorates the specified map to add the MultiKeyMap API and fast query. The map must not be null and must be empty.Type Parameters: K - the key type V - the value type Parameters: map - the map to decorate, not null Returns: a new multi key map Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if map is null [IllegalArgumentException](https://docs.oracle.com/javase/7/docs/api/java/lang/IllegalArgumentException.html?is-external=true) - if the map is not empty Since: 4.0

#### get public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) get([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) Gets the value mapped to the specified multi-key.Parameters: key1 - the first key key2 - the second key Returns: the mapped value, null if no match

#### containsKey public boolean containsKey([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) Checks whether the map contains the specified multi-key.Parameters: key1 - the first key key2 - the second key Returns: true if the map contains the key

#### put public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) put([K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key1, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key2, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Stores the value against the specified multi-key.Parameters: key1 - the first key key2 - the second key value - the value to store Returns: the value previously mapped to this combined key, null if none

#### removeMultiKey public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) removeMultiKey([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) Removes the specified multi-key from this map.Parameters: key1 - the first key key2 - the second key Returns: the value mapped to the removed key, null if key not in map Since: 4.0 (previous name: remove(Object, Object))

#### hash protected int hash([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) Gets the hash code for the specified multi-key.Parameters: key1 - the first key key2 - the second key Returns: the hash code

#### isEqualKey protected boolean isEqualKey([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> entry, [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) Is the key equal to the combined key.Parameters: entry - the entry to compare to key1 - the first key key2 - the second key Returns: true if the key matches

#### get public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) get([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Gets the value mapped to the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key Returns: the mapped value, null if no match

#### containsKey public boolean containsKey([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Checks whether the map contains the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key Returns: true if the map contains the key

#### put public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) put([K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key1, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key2, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key3, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Stores the value against the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key value - the value to store Returns: the value previously mapped to this combined key, null if none

#### removeMultiKey public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) removeMultiKey([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Removes the specified multi-key from this map.Parameters: key1 - the first key key2 - the second key key3 - the third key Returns: the value mapped to the removed key, null if key not in map Since: 4.0 (previous name: remove(Object, Object, Object))

#### hash protected int hash([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Gets the hash code for the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key Returns: the hash code

#### isEqualKey protected boolean isEqualKey([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> entry, [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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Is the key equal to the combined key.Parameters: entry - the entry to compare to key1 - the first key key2 - the second key key3 - the third key Returns: true if the key matches

#### get public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) get([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Gets the value mapped to the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key Returns: the mapped value, null if no match

#### containsKey public boolean containsKey([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Checks whether the map contains the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key Returns: true if the map contains the key

#### put public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) put([K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key1, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key2, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key3, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key4, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Stores the value against the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key value - the value to store Returns: the value previously mapped to this combined key, null if none

#### removeMultiKey public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) removeMultiKey([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Removes the specified multi-key from this map.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key Returns: the value mapped to the removed key, null if key not in map Since: 4.0 (previous name: remove(Object, Object, Object, Object))

#### hash protected int hash([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Gets the hash code for the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key Returns: the hash code

#### isEqualKey protected boolean isEqualKey([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> entry, [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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Is the key equal to the combined key.Parameters: entry - the entry to compare to key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key Returns: true if the key matches

#### get public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) get([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Gets the value mapped to the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key key5 - the fifth key Returns: the mapped value, null if no match

#### containsKey public boolean containsKey([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Checks whether the map contains the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key key5 - the fifth key Returns: true if the map contains the key

#### put public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) put([K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key1, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key2, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key3, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key4, [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) key5, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Stores the value against the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key key5 - the fifth key value - the value to store Returns: the value previously mapped to this combined key, null if none

#### removeMultiKey public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) removeMultiKey([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Removes the specified multi-key from this map.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key key5 - the fifth key Returns: the value mapped to the removed key, null if key not in map Since: 4.0 (previous name: remove(Object, Object, Object, Object, Object))

#### hash protected int hash([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Gets the hash code for the specified multi-key.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key key5 - the fifth key Returns: the hash code

#### isEqualKey protected boolean isEqualKey([AbstractHashedMap.HashEntry](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.HashEntry.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> entry, [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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key5) Is the key equal to the combined key.Parameters: entry - the entry to compare to key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key key5 - the fifth key Returns: true if the key matches

#### removeAll public boolean removeAll([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key1) Removes all mappings where the first key is that specified. This method removes all the mappings where the MultiKey has one or more keys, and the first matches that specified.Parameters: key1 - the first key Returns: true if any elements were removed

#### removeAll public boolean removeAll([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) Removes all mappings where the first two keys are those specified. This method removes all the mappings where the MultiKey has two or more keys, and the first two match those specified.Parameters: key1 - the first key key2 - the second key Returns: true if any elements were removed

#### removeAll public boolean removeAll([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3) Removes all mappings where the first three keys are those specified. This method removes all the mappings where the MultiKey has three or more keys, and the first three match those specified.Parameters: key1 - the first key key2 - the second key key3 - the third key Returns: true if any elements were removed

#### removeAll public boolean removeAll([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, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key3, [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) key4) Removes all mappings where the first four keys are those specified. This method removes all the mappings where the MultiKey has four or more keys, and the first four match those specified.Parameters: key1 - the first key key2 - the second key key3 - the third key key4 - the fourth key Returns: true if any elements were removed

#### checkKey protected void checkKey([MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<?> key) Check to ensure that input keys are valid MultiKey objects.Parameters: key - the key to check

#### clone public [MultiKeyMap](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html),[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> clone() Clones the map without cloning the keys or values.Overrides: [clone](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#clone--) in class [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) Returns: a shallow clone

#### put public [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) put([MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> key, [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html) value) Puts the key and value into the map, where the key must be a non-null MultiKey object.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)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.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)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> Overrides: [put](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#put-K-V-) in class [AbstractMapDecorator](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> Parameters: key - the non-null MultiKey object value - the value to store Returns: the previous value for the key Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the key is null [ClassCastException](https://docs.oracle.com/javase/7/docs/api/java/lang/ClassCastException.html?is-external=true) - if the key is not a MultiKey See Also: [Map.put(Object, Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#put-K-V-)

#### putAll public void putAll([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,? extends [V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> mapToCopy) Copies all of the keys and values from the specified map to this map. Each key must be non-null and a MultiKey object.Specified by: [putAll](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#putAll-java.util.Map-) in interface [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> Specified by: [putAll](http://docs.google.com/org/apache/commons/collections4/Put.html#putAll-java.util.Map-) in interface [Put](http://docs.google.com/org/apache/commons/collections4/Put.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> Overrides: [putAll](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#putAll-java.util.Map-) in class [AbstractMapDecorator](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> Parameters: mapToCopy - to this map Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the mapToCopy or any key within is null [ClassCastException](https://docs.oracle.com/javase/7/docs/api/java/lang/ClassCastException.html?is-external=true) - if any key in mapToCopy is not a MultiKey See Also: [Map.putAll(Map)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#putAll-java.util.Map-)

#### mapIterator public [MapIterator](http://docs.google.com/org/apache/commons/collections4/MapIterator.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> mapIterator() Description copied from class: [AbstractIterableMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractIterableMap.html#mapIterator--) Obtains a MapIterator over the map. A map iterator is an efficient way of iterating over maps. There is no need to access the entry set or use Map Entry objects. IterableMap<String,Integer> map = new HashedMap<String,Integer>(); MapIterator<String,Integer> it = map.mapIterator(); while (it.hasNext()) { String key = it.next(); Integer value = it.getValue(); it.setValue(value + 1); } 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)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> Overrides: [mapIterator](http://docs.google.com/org/apache/commons/collections4/map/AbstractIterableMap.html#mapIterator--) in class [AbstractIterableMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractIterableMap.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> Returns: a map iterator

#### decorated protected [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> decorated() Gets the map being decorated.Overrides: [decorated](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html#decorated--) in class [AbstractMapDecorator](http://docs.google.com/org/apache/commons/collections4/map/AbstractMapDecorator.html)<[MultiKey](http://docs.google.com/org/apache/commons/collections4/keyvalue/MultiKey.html)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)>,[V](http://docs.google.com/org/apache/commons/collections4/map/MultiKeyMap.html)> Returns: the decorated map

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