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org.apache.commons.collections4.map

## Class Flat3Map<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.Flat3Map<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)<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>  
    
  public class Flat3Map<K,V>  
  extends [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)  
  implements [IterableMap](http://docs.google.com/org/apache/commons/collections4/IterableMap.html)<K,V>, [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 stores data in simple fields until the size is greater than 3.  
  This map is designed for performance and can outstrip HashMap. It also has good garbage collection characteristics.
  + Optimised for operation at size 3 or less.
  + Still works well once size 3 exceeded.
  + Gets at size 3 or less are about 0-10% faster than HashMap,
  + Puts at size 3 or less are over 4 times faster than HashMap.
  + Performance 5% slower than HashMap once size 3 exceeded once.

The design uses two distinct modes of operation - flat and delegate. While the map is size 3 or less, operations map straight onto fields using switch statements. Once size 4 is reached, the map switches to delegate mode and only switches back when cleared. In delegate mode, all operations are forwarded straight to a HashMap resulting in the 5% performance loss.  
The performance gains on puts are due to not needing to create a Map Entry object. This is a large saving not only in performance but in garbage collection.  
Whilst in flat mode this map is also easy for the garbage collector to dispatch. This is because it contains no complex objects or arrays which slow the progress.  
Do not use Flat3Map if the size is likely to grow beyond 3.  
**Note that Flat3Map is not synchronized and is not thread-safe.** If you wish to use this map from multiple threads concurrently, you must use appropriate synchronization. The simplest approach is to wrap this map using [Collections.synchronizedMap(Map)](https://docs.oracle.com/javase/7/docs/api/java/util/Collections.html?is-external=true#synchronizedMap-java.util.Map-). This class may throw exceptions when accessed by concurrent threads without synchronization.Since: 3.0 See Also: [Serialized Form](http://docs.google.com/serialized-form.html#org.apache.commons.collections4.map.Flat3Map)

### 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

|  |
| --- |
| * + Constructor and Description |
| * + [Flat3Map](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#Flat3Map--)() Constructor. |
| * + [Flat3Map](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#Flat3Map-java.util.Map-)([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),? extends [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> map) Constructor copying elements from another map. |

### Method SummaryAll Methods Instance Methods Concrete Methods

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + void | * + [clear](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#clear--)() Clears the map, resetting the size to zero and nullifying references to avoid garbage collection issues. |
| * + [Flat3Map](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> | * + [clone](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#clone--)() Clones the map without cloning the keys or values. |
| * + boolean | * + [containsKey](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.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 [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> | * + [createDelegateMap](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#createDelegateMap--)() Create an instance of the map used for storage when in delegation mode. |
| * + [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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)>> | * + [entrySet](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#entrySet--)() Gets the entrySet view of the map. |
| * + boolean | * + [equals](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#equals-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) obj) Compares this map with another. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html) | * + [get](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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. |
| * + int | * + [hashCode](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#hashCode--)() Gets the standard Map hashCode. |
| * + boolean | * + [isEmpty](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#isEmpty--)() Checks whether the map is currently empty. |
| * + [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/Flat3Map.html)> | * + [keySet](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#keySet--)() Gets the keySet view of the map. |
| * + [MapIterator](http://docs.google.com/org/apache/commons/collections4/MapIterator.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> | * + [mapIterator](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#mapIterator--)() Gets an iterator over the map. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html) | * + [put](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#put-K-V-)([K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html) key, [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html) value) Puts a key-value mapping into this map. |
| * + void | * + [putAll](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#putAll-java.util.Map-)([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),? extends [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> map) Puts all the values from the specified map into this map. |
| * + [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html) | * + [remove](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html#size--)() Gets the size of the map. |
| * + [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true) | * + [toString](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#toString--)() Gets the map as a String. |
| * + [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/Flat3Map.html)> | * + [values](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#values--)() Gets the values view of the map. |

### 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

#### Flat3Map public Flat3Map() Constructor.

#### Flat3Map public Flat3Map([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),? extends [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> map) Constructor copying elements from another map.Parameters: map - the map to copy Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the map is null

### Method Detail

#### get public [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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-)

#### 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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Parameters: value - the value to search for Returns: true if the map contains the key See Also: [Map.containsValue(Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#containsValue-java.lang.Object-)

#### put public [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html) put([K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html) key, [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html) value) Puts a key-value mapping into this map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Parameters: key - the key to add value - the value to add Returns: the value previously mapped to this key, null if none 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 [K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),? extends [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> map) Puts all the values from the specified map into this map.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)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Parameters: map - the map to add Throws: [NullPointerException](https://docs.oracle.com/javase/7/docs/api/java/lang/NullPointerException.html?is-external=true) - if the map is null See Also: [Map.putAll(Map)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#putAll-java.util.Map-)

#### createDelegateMap protected [AbstractHashedMap](http://docs.google.com/org/apache/commons/collections4/map/AbstractHashedMap.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> createDelegateMap() Create an instance of the map used for storage when in delegation mode. This can be overridden by subclasses to provide a different map implementation. Not every AbstractHashedMap is suitable, identity and reference based maps would be poor choices.Returns: a new AbstractHashedMap or subclass Since: 3.1

#### remove public [V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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 the map, resetting the size to zero and nullifying references to avoid garbage collection issues.Specified by: [clear](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#clear--) in interface [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> mapIterator() Gets an iterator over the map. Changes made to the iterator affect this map. A MapIterator returns the keys in the map. It also provides convenient methods to get the key and value, and set the value. It avoids the need to create an entrySet/keySet/values object. It also avoids creating the Map Entry object.Specified by: [mapIterator](http://docs.google.com/org/apache/commons/collections4/IterableGet.html#mapIterator--) in interface [IterableGet](http://docs.google.com/org/apache/commons/collections4/IterableGet.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Returns: the 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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)>> entrySet() Gets the entrySet view of the map. Changes made to the view affect this map. NOTE: from 4.0, the returned Map Entry will be an independent object and will not change anymore as the iterator progresses. To avoid this additional object creation and simply iterate through the entries, use [mapIterator()](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#mapIterator--).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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Returns: the entrySet view 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/Flat3Map.html)> keySet() Gets the keySet view of the map. Changes made to the view affect this map. To simply iterate through the keys, use [mapIterator()](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#mapIterator--).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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Returns: the keySet view 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/Flat3Map.html)> values() Gets the values view of the map. Changes made to the view affect this map. To simply iterate through the values, use [mapIterator()](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html#mapIterator--).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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Returns: the values view See Also: [Map.values()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#values--)

#### clone public [Flat3Map](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)<[K](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.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 Since: 3.1

#### equals public boolean equals([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) obj) Compares this map with another.Specified by: [equals](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#equals-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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Overrides: [equals](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#equals-java.lang.Object-) in class [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) Parameters: obj - the object to compare to Returns: true if equal

#### hashCode public int hashCode() Gets the standard Map hashCode.Specified by: [hashCode](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#hashCode--) 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/Flat3Map.html),[V](http://docs.google.com/org/apache/commons/collections4/map/Flat3Map.html)> Overrides: [hashCode](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#hashCode--) in class [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) Returns: the hash code defined in the Map interface

#### toString public [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true) toString() Gets the map as a String.Overrides: [toString](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#toString--) in class [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) Returns: a string version of the map

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