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org.apache.commons.collections4.trie

## Class PatriciaTrie<E>

* [java.lang.Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)
  + [java.util.AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V>
    - [org.apache.commons.collections4.trie.AbstractBitwiseTrie](http://docs.google.com/org/apache/commons/collections4/trie/AbstractBitwiseTrie.html)<K,V>
      * org.apache.commons.collections4.trie.PatriciaTrie<E>
* Type Parameters: E - 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), [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>, [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>, [Get](http://docs.google.com/org/apache/commons/collections4/Get.html)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>, [IterableGet](http://docs.google.com/org/apache/commons/collections4/IterableGet.html)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>, [IterableMap](http://docs.google.com/org/apache/commons/collections4/IterableMap.html)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>, [IterableSortedMap](http://docs.google.com/org/apache/commons/collections4/IterableSortedMap.html)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>, [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>, [Put](http://docs.google.com/org/apache/commons/collections4/Put.html)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>, [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html)<[String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),E>  
    
  public class PatriciaTrie<E>  
  extends [AbstractBitwiseTrie](http://docs.google.com/org/apache/commons/collections4/trie/AbstractBitwiseTrie.html)<K,V>  
  Implementation of a PATRICIA Trie (Practical Algorithm to Retrieve Information Coded in Alphanumeric).  
  A PATRICIA [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) is a compressed [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html). Instead of storing all data at the edges of the [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) (and having empty internal nodes), PATRICIA stores data in every node. This allows for very efficient traversal, insert, delete, predecessor, successor, prefix, range, and [select(Object)](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#select-K-) operations. All operations are performed at worst in O(K) time, where K is the number of bits in the largest item in the tree. In practice, operations actually take O(A(K)) time, where A(K) is the average number of bits of all items in the tree.  
  Most importantly, PATRICIA requires very few comparisons to keys while doing any operation. While performing a lookup, each comparison (at most K of them, described above) will perform a single bit comparison against the given key, instead of comparing the entire key to another key.  
  The [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) can return operations in lexicographical order using the 'prefixMap', 'submap', or 'iterator' methods. The [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) can also scan for items that are 'bitwise' (using an XOR metric) by the 'select' method. Bitwise closeness is determined by the [KeyAnalyzer](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) returning true or false for a bit being set or not in a given key.  
  This PATRICIA [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) supports both variable length & fixed length keys. Some methods, such as [prefixMap(Object)](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#prefixMap-K-) are suited only to variable length keys.Since: 4.0 See Also: [Radix Tree](http://en.wikipedia.org/wiki/Radix_tree), [PATRICIA](http://www.csse.monash.edu.au/~lloyd/tildeAlgDS/Tree/PATRICIA), [Crit-Bit Tree](http://www.imperialviolet.org/binary/critbit.pdf), [Serialized Form](http://docs.google.com/serialized-form.html#org.apache.commons.collections4.trie.PatriciaTrie)

### Nested Class SummaryNested Classes

|  |  |
| --- | --- |
| * + Modifier and Type | * + Class and Description |
| * + protected static class | * + org.apache.commons.collections4.trie.AbstractPatriciaTrie.TrieEntry<K,V> A [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) is a set of AbstractPatriciaTrie.TrieEntry nodes. |

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

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

### Field SummaryFields

|  |  |
| --- | --- |
| * + Modifier and Type | * + Field and Description |
| * + protected int | * + [modCount](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#modCount) The number of times this [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) has been modified. |

### Constructor SummaryConstructors

|  |
| --- |
| * + Constructor and Description |
| * + [PatriciaTrie](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#PatriciaTrie--)() |
| * + [PatriciaTrie](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#PatriciaTrie-java.util.Map-)([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),? extends [E](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html)> m) |

### Method SummaryAll Methods Instance Methods Concrete Methods

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + void | * + [clear](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#clear--)() |
| * + [Comparator](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true)<? super K> | * + [comparator](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#comparator--)() |
| * + boolean | * + [containsKey](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#containsKey-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) k) |
| * + [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,V>> | * + [entrySet](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#entrySet--)() |
| * + K | * + [firstKey](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#firstKey--)() Gets the first key currently in this map. |
| * + V | * + [get](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#get-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) k) |
| * + [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> | * + [headMap](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#headMap-K-)(K toKey) |
| * + [Set](https://docs.oracle.com/javase/7/docs/api/java/util/Set.html?is-external=true)<K> | * + [keySet](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#keySet--)() |
| * + K | * + [lastKey](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#lastKey--)() Gets the last key currently in this map. |
| * + [OrderedMapIterator](http://docs.google.com/org/apache/commons/collections4/OrderedMapIterator.html)<K,V> | * + [mapIterator](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#mapIterator--)() Obtains a MapIterator over the map. |
| * + K | * + [nextKey](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#nextKey-K-)(K key) Gets the next key after the one specified. |
| * + [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> | * + [prefixMap](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#prefixMap-K-)(K key) Returns a view of this [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) of all elements that are prefixed by the given key. |
| * + K | * + [previousKey](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#previousKey-K-)(K key) Gets the previous key before the one specified. |
| * + V | * + [put](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#put-K-V-)(K key, V value) Note that the return type is Object, rather than V as in the Map interface. |
| * + V | * + [remove](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#remove-java.lang.Object-)([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) k) |
| * + [Map.Entry](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true)<K,V> | * + [select](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#select-K-)(K key) Returns the [Map.Entry](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true) whose key is closest in a bitwise XOR metric to the given key. |
| * + K | * + [selectKey](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#selectKey-K-)(K key) Returns the key that is closest in a bitwise XOR metric to the provided key. |
| * + V | * + [selectValue](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#selectValue-K-)(K key) Returns the value whose key is closest in a bitwise XOR metric to the provided key. |
| * + int | * + [size](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#size--)() |
| * + [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> | * + [subMap](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#subMap-K-K-)(K fromKey, K toKey) |
| * + [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> | * + [tailMap](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#tailMap-K-)(K fromKey) |
| * + [Collection](https://docs.oracle.com/javase/7/docs/api/java/util/Collection.html?is-external=true)<V> | * + [values](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html#values--)() |

### Methods inherited from class org.apache.commons.collections4.trie.[**AbstractBitwiseTrie**](http://docs.google.com/org/apache/commons/collections4/trie/AbstractBitwiseTrie.html)[getKeyAnalyzer](http://docs.google.com/org/apache/commons/collections4/trie/AbstractBitwiseTrie.html#getKeyAnalyzer--), [toString](http://docs.google.com/org/apache/commons/collections4/trie/AbstractBitwiseTrie.html#toString--)

### Methods inherited from class java.util.[**AbstractMap**](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)[clone](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#clone--), [containsValue](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#containsValue-java.lang.Object-), [equals](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#equals-java.lang.Object-), [hashCode](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#hashCode--), [isEmpty](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#isEmpty--), [putAll](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#putAll-java.util.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-), [containsValue](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#containsValue-java.lang.Object-), [equals](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#equals-java.lang.Object-), [forEach](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#forEach-java.util.function.BiConsumer-), [getOrDefault](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#getOrDefault-java.lang.Object-V-), [hashCode](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#hashCode--), [isEmpty](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#isEmpty--), [merge](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#merge-K-V-java.util.function.BiFunction-), [putAll](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#putAll-java.util.Map-), [putIfAbsent](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#putIfAbsent-K-V-), [remove](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#remove-java.lang.Object-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-)

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

### Methods inherited from interface org.apache.commons.collections4.[**Get**](http://docs.google.com/org/apache/commons/collections4/Get.html)[containsValue](http://docs.google.com/org/apache/commons/collections4/Get.html#containsValue-java.lang.Object-), [isEmpty](http://docs.google.com/org/apache/commons/collections4/Get.html#isEmpty--)

### Field Detail

#### modCount protected transient int modCount The number of times this [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) has been modified. It's used to detect concurrent modifications and fail-fast the [Iterator](https://docs.oracle.com/javase/7/docs/api/java/util/Iterator.html?is-external=true)s.

### Constructor Detail

#### PatriciaTrie public PatriciaTrie()

#### PatriciaTrie public PatriciaTrie([Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<? extends [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html?is-external=true),? extends [E](http://docs.google.com/org/apache/commons/collections4/trie/PatriciaTrie.html)> m)

### Method Detail

#### clear public void clear()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,V> 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,V> Overrides: [clear](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#clear--) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> See Also: [Map.clear()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#clear--)

#### size public int size()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,V> 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,V> Overrides: [size](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#size--) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> Returns: the number of key-value mappings in this map See Also: [Map.size()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#size--)

#### put public V put(K key, V value) Description copied from interface: [Put](http://docs.google.com/org/apache/commons/collections4/Put.html#put-K-V-) Note that the return type is Object, rather than V as in the Map interface. See the class Javadoc for further info.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,V> 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,V> Overrides: [put](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#put-K-V-) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> Parameters: key - key with which the specified value is to be associated value - value to be associated with the specified key Returns: the previous value associated with key, or null if there was no mapping for key. (A null return can also indicate that the map previously associated null with key, if the implementation supports null values.) See Also: [Map.put(Object, Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#put-K-V-)

#### get public V get([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) k)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,V> 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,V> Overrides: [get](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#get-java.lang.Object-) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> Parameters: k - the key whose associated value is to be returned Returns: the value to which the specified key is mapped, or null if this map contains no mapping for the key See Also: [Map.get(Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#get-java.lang.Object-)

#### select public [Map.Entry](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true)<K,V> select(K key)

* + - Returns the [Map.Entry](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true) whose key is closest in a bitwise XOR metric to the given key. This is NOT lexicographic closeness. For example, given the keys:
      1. D = 1000100
      2. H = 1001000
      3. L = 1001100

If the [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) contained 'H' and 'L', a lookup of 'D' would return 'L', because the XOR distance between D & L is smaller than the XOR distance between D & H.Parameters: key - the key to use in the search Returns: the [Map.Entry](https://docs.oracle.com/javase/7/docs/api/java/util/Map.Entry.html?is-external=true) whose key is closest in a bitwise XOR metric to the provided key

#### selectKey public K selectKey(K key)

* + - Returns the key that is closest in a bitwise XOR metric to the provided key. This is NOT lexicographic closeness! For example, given the keys:
      1. D = 1000100
      2. H = 1001000
      3. L = 1001100

If the [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) contained 'H' and 'L', a lookup of 'D' would return 'L', because the XOR distance between D & L is smaller than the XOR distance between D & H.Parameters: key - the key to use in the search Returns: the key that is closest in a bitwise XOR metric to the provided key

#### selectValue public V selectValue(K key)

* + - Returns the value whose key is closest in a bitwise XOR metric to the provided key. This is NOT lexicographic closeness! For example, given the keys:
      1. D = 1000100
      2. H = 1001000
      3. L = 1001100

If the [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) contained 'H' and 'L', a lookup of 'D' would return 'L', because the XOR distance between D & L is smaller than the XOR distance between D & H.Parameters: key - the key to use in the search Returns: the value whose key is closest in a bitwise XOR metric to the provided key

#### containsKey public boolean containsKey([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) k)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,V> 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,V> Overrides: [containsKey](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#containsKey-java.lang.Object-) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> Parameters: k - key whose presence in this map is to be tested Returns: true if this map contains a mapping for the specified 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-)

#### 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,V>> entrySet()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,V> Specified by: [entrySet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true#entrySet--) in interface [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> 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,V> Specified by: [entrySet](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#entrySet--) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> Returns: a set view of the mappings contained in this map 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> keySet()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,V> Specified by: [keySet](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true#keySet--) in interface [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> 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,V> Overrides: [keySet](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#keySet--) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> Returns: a set view of the keys contained in this map 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> values()Specified by: [values](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#values--) in interface [Map](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true)<K,V> Specified by: [values](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true#values--) in interface [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> 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,V> Overrides: [values](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#values--) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> Returns: a collection view of the values contained in this map See Also: [Map.values()](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#values--)

#### remove public V remove([Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true) k)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,V> 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,V> Overrides: [remove](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true#remove-java.lang.Object-) in class [AbstractMap](https://docs.oracle.com/javase/7/docs/api/java/util/AbstractMap.html?is-external=true)<K,V> Parameters: k - key whose mapping is to be removed from the map Returns: the previous value associated with key, or null if there was no mapping for key. Throws: [ClassCastException](https://docs.oracle.com/javase/7/docs/api/java/lang/ClassCastException.html?is-external=true) - if provided key is of an incompatible type See Also: [Map.remove(Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#remove-java.lang.Object-)

#### comparator public [Comparator](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true)<? super K> comparator()

#### firstKey public K firstKey() Description copied from interface: [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#firstKey--) Gets the first key currently in this map.Returns: the first key currently in this map

#### lastKey public K lastKey() Description copied from interface: [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#lastKey--) Gets the last key currently in this map.Returns: the last key currently in this map

#### nextKey public K nextKey(K key) Description copied from interface: [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#nextKey-K-) Gets the next key after the one specified.Parameters: key - the key to search for next from Returns: the next key, null if no match or at end

#### previousKey public K previousKey(K key) Description copied from interface: [OrderedMap](http://docs.google.com/org/apache/commons/collections4/OrderedMap.html#previousKey-K-) Gets the previous key before the one specified.Parameters: key - the key to search for previous from Returns: the previous key, null if no match or at start

#### mapIterator public [OrderedMapIterator](http://docs.google.com/org/apache/commons/collections4/OrderedMapIterator.html)<K,V> mapIterator() Description copied from interface: [IterableGet](http://docs.google.com/org/apache/commons/collections4/IterableGet.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); } Returns: a map iterator

#### prefixMap public [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> prefixMap(K key) Description copied from interface: [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html#prefixMap-K-) Returns a view of this [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) of all elements that are prefixed by the given key. In a [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) with fixed size keys, this is essentially a [Map.get(Object)](https://docs.oracle.com/javase/7/docs/api/java/util/Map.html?is-external=true#get-java.lang.Object-) operation. For example, if the [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) contains 'Anna', 'Anael', 'Analu', 'Andreas', 'Andrea', 'Andres', and 'Anatole', then a lookup of 'And' would return 'Andreas', 'Andrea', and 'Andres'.Parameters: key - the key used in the search Returns: a [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true) view of this [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) with all elements whose key is prefixed by the search key

#### headMap public [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> headMap(K toKey)

#### subMap public [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> subMap(K fromKey, K toKey)

#### tailMap public [SortedMap](https://docs.oracle.com/javase/7/docs/api/java/util/SortedMap.html?is-external=true)<K,V> tailMap(K fromKey)

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