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org.apache.commons.collections4.trie

## Class KeyAnalyzer<K>

* [java.lang.Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)
  + org.apache.commons.collections4.trie.KeyAnalyzer<K>
* Type Parameters: K - the type of objects that may be compared by this analyzer All Implemented Interfaces: [Serializable](https://docs.oracle.com/javase/7/docs/api/java/io/Serializable.html?is-external=true), [Comparator](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true)<K> Direct Known Subclasses: [StringKeyAnalyzer](http://docs.google.com/org/apache/commons/collections4/trie/analyzer/StringKeyAnalyzer.html)  
    
  public abstract class KeyAnalyzer<K>  
  extends [Object](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)  
  implements [Comparator](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true)<K>, [Serializable](https://docs.oracle.com/javase/7/docs/api/java/io/Serializable.html?is-external=true)  
  Defines the interface to analyze [Trie](http://docs.google.com/org/apache/commons/collections4/Trie.html) keys on a bit level. [KeyAnalyzer](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html)'s methods return the length of the key in bits, whether or not a bit is set, and bits per element in the key.  
  Additionally, a method determines if a key is a prefix of another key and returns the bit index where one key is different from another key (if the key and found key are equal than the return value is [EQUAL\_BIT\_KEY](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#EQUAL_BIT_KEY)).Since: 4.0 See Also: [Serialized Form](http://docs.google.com/serialized-form.html#org.apache.commons.collections4.trie.KeyAnalyzer)

### Field SummaryFields

|  |  |
| --- | --- |
| * + Modifier and Type | * + Field and Description |
| * + static int | * + [EQUAL\_BIT\_KEY](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#EQUAL_BIT_KEY) Returned by [bitIndex(Object, int, int, Object, int, int)](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#bitIndex-K-int-int-K-int-int-) if key and found key are equal. |
| * + static int | * + [NULL\_BIT\_KEY](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#NULL_BIT_KEY) Returned by [bitIndex(Object, int, int, Object, int, int)](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#bitIndex-K-int-int-K-int-int-) if key's bits are all 0. |
| * + static int | * + [OUT\_OF\_BOUNDS\_BIT\_KEY](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#OUT_OF_BOUNDS_BIT_KEY) |

### Constructor SummaryConstructors

|  |
| --- |
| * + Constructor and Description |
| * + [KeyAnalyzer](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#KeyAnalyzer--)() |

### Method SummaryAll Methods Instance Methods Abstract Methods Concrete Methods

|  |  |
| --- | --- |
| * + Modifier and Type | * + Method and Description |
| * + abstract int | * + [bitIndex](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#bitIndex-K-int-int-K-int-int-)([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) key, int offsetInBits, int lengthInBits, [K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) other, int otherOffsetInBits, int otherLengthInBits) Returns the n-th different bit between key and other. |
| * + abstract int | * + [bitsPerElement](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#bitsPerElement--)() Returns the number of bits per element in the key. |
| * + int | * + [compare](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#compare-K-K-)([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) o1, [K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) o2) |
| * + abstract boolean | * + [isBitSet](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#isBitSet-K-int-int-)([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) key, int bitIndex, int lengthInBits) Returns whether or not a bit is set. |
| * + abstract boolean | * + [isPrefix](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#isPrefix-K-int-int-K-)([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) prefix, int offsetInBits, int lengthInBits, [K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) key) Determines whether or not the given prefix (from offset to length) is a prefix of the given key. |
| * + abstract int | * + [lengthInBits](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#lengthInBits-K-)([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) key) Returns the length of the Key in bits. |

### Methods inherited from class java.lang.[**Object**](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true)[clone](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#clone--), [equals](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#equals-java.lang.Object-), [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--), [hashCode](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#hashCode--), [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--), [toString](https://docs.oracle.com/javase/7/docs/api/java/lang/Object.html?is-external=true#toString--), [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.[**Comparator**](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true)[comparing](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#comparing-java.util.function.Function-), [comparing](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#comparing-java.util.function.Function-java.util.Comparator-), [comparingDouble](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#comparingDouble-java.util.function.ToDoubleFunction-), [comparingInt](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#comparingInt-java.util.function.ToIntFunction-), [comparingLong](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#comparingLong-java.util.function.ToLongFunction-), [equals](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#equals-java.lang.Object-), [naturalOrder](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#naturalOrder--), [nullsFirst](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#nullsFirst-java.util.Comparator-), [nullsLast](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#nullsLast-java.util.Comparator-), [reversed](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#reversed--), [reverseOrder](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#reverseOrder--), [thenComparing](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#thenComparing-java.util.Comparator-), [thenComparing](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#thenComparing-java.util.function.Function-), [thenComparing](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#thenComparing-java.util.function.Function-java.util.Comparator-), [thenComparingDouble](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#thenComparingDouble-java.util.function.ToDoubleFunction-), [thenComparingInt](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#thenComparingInt-java.util.function.ToIntFunction-), [thenComparingLong](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#thenComparingLong-java.util.function.ToLongFunction-)

### Field Detail

#### NULL\_BIT\_KEY public static final int NULL\_BIT\_KEY Returned by [bitIndex(Object, int, int, Object, int, int)](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#bitIndex-K-int-int-K-int-int-) if key's bits are all 0.See Also: [Constant Field Values](http://docs.google.com/constant-values.html#org.apache.commons.collections4.trie.KeyAnalyzer.NULL_BIT_KEY)

#### EQUAL\_BIT\_KEY public static final int EQUAL\_BIT\_KEY Returned by [bitIndex(Object, int, int, Object, int, int)](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html#bitIndex-K-int-int-K-int-int-) if key and found key are equal. This is a very very specific case and shouldn't happen on a regular basis.See Also: [Constant Field Values](http://docs.google.com/constant-values.html#org.apache.commons.collections4.trie.KeyAnalyzer.EQUAL_BIT_KEY)

#### OUT\_OF\_BOUNDS\_BIT\_KEY public static final int OUT\_OF\_BOUNDS\_BIT\_KEYSee Also: [Constant Field Values](http://docs.google.com/constant-values.html#org.apache.commons.collections4.trie.KeyAnalyzer.OUT_OF_BOUNDS_BIT_KEY)

### Constructor Detail

#### KeyAnalyzer public KeyAnalyzer()

### Method Detail

#### bitsPerElement public abstract int bitsPerElement() Returns the number of bits per element in the key. This is only useful for variable-length keys, such as Strings.Returns: the number of bits per element

#### lengthInBits public abstract int lengthInBits([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) key) Returns the length of the Key in bits.Parameters: key - the key Returns: the bit length of the key

#### isBitSet public abstract boolean isBitSet([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) key, int bitIndex, int lengthInBits) Returns whether or not a bit is set.Parameters: key - the key to check, may not be null bitIndex - the bit index to check lengthInBits - the maximum key length in bits to check Returns: true if the bit is set in the given key and bitIndex < lengthInBits, false otherwise.

#### bitIndex public abstract int bitIndex([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) key, int offsetInBits, int lengthInBits, [K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) other, int otherOffsetInBits, int otherLengthInBits) Returns the n-th different bit between key and other. This starts the comparison in key at 'offsetInBits' and goes for 'lengthInBits' bits, and compares to the other key starting at 'otherOffsetInBits' and going for 'otherLengthInBits' bits.Parameters: key - the key to use offsetInBits - the bit offset in the key lengthInBits - the maximum key length in bits to use other - the other key to use otherOffsetInBits - the bit offset in the other key otherLengthInBits - the maximum key length in bits for the other key Returns: the bit index where the key and other first differ

#### isPrefix public abstract boolean isPrefix([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) prefix, int offsetInBits, int lengthInBits, [K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) key) Determines whether or not the given prefix (from offset to length) is a prefix of the given key.Parameters: prefix - the prefix to check offsetInBits - the bit offset in the key lengthInBits - the maximum key length in bits to use key - the key to check Returns: true if this is a valid prefix for the given key

#### compare public int compare([K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) o1, [K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html) o2)Specified by: [compare](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true#compare-T-T-) in interface [Comparator](https://docs.oracle.com/javase/7/docs/api/java/util/Comparator.html?is-external=true)<[K](http://docs.google.com/org/apache/commons/collections4/trie/KeyAnalyzer.html)>

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