| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/NumericShaper.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/awt/font/MultipleMaster.html)   [**NEXT CLASS**](http://docs.google.com/java/awt/font/OpenType.html) | [**FRAMES**](http://docs.google.com/index.html?java/awt/font/NumericShaper.html)    [**NO FRAMES**](http://docs.google.com/NumericShaper.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: NESTED | [FIELD](#3znysh7) | CONSTR | [METHOD](#2et92p0) | DETAIL: [FIELD](#3dy6vkm) | CONSTR | [METHOD](#3as4poj) |

## **java.awt.font**

Class NumericShaper

[java.lang.Object](http://docs.google.com/java/lang/Object.html)  
 **java.awt.font.NumericShaper**

**All Implemented Interfaces:** [Serializable](http://docs.google.com/java/io/Serializable.html)

public final class **NumericShaper**extends [Object](http://docs.google.com/java/lang/Object.html)implements [Serializable](http://docs.google.com/java/io/Serializable.html)

The NumericShaper class is used to convert Latin-1 (European) digits to other Unicode decimal digits. Users of this class will primarily be people who wish to present data using national digit shapes, but find it more convenient to represent the data internally using Latin-1 (European) digits. This does not interpret the deprecated numeric shape selector character (U+206E).

Instances of NumericShaper are typically applied as attributes to text with the [NUMERIC\_SHAPING](http://docs.google.com/java/awt/font/TextAttribute.html#NUMERIC_SHAPING) attribute of the TextAttribute class. For example, this code snippet causes a TextLayout to shape European digits to Arabic in an Arabic context:

Map map = new HashMap();  
 map.put(TextAttribute.NUMERIC\_SHAPING,   
 NumericShaper.getContextualShaper(NumericShaper.ARABIC));  
 FontRenderContext frc = ...;  
 TextLayout layout = new TextLayout(text, map, frc);  
 layout.draw(g2d, x, y);

It is also possible to perform numeric shaping explicitly using instances of NumericShaper, as this code snippet demonstrates:

char[] text = ...;  
 // shape all EUROPEAN digits (except zero) to ARABIC digits  
 NumericShaper shaper = NumericShaper.getShaper(NumericShaper.ARABIC);  
 shaper.shape(text, start, count);  
  
 // shape European digits to ARABIC digits if preceding text is Arabic, or  
 // shape European digits to TAMIL digits if preceding text is Tamil, or  
 // leave European digits alone if there is no preceding text, or   
 // preceding text is neither Arabic nor Tamil  
 NumericShaper shaper =   
 NumericShaper.getContextualShaper(NumericShaper.ARABIC |   
 NumericShaper.TAMIL,  
 NumericShaper.EUROPEAN);  
 shaper.shape(text. start, count);

**Since:** 1.4 **See Also:**[Serialized Form](http://docs.google.com/serialized-form.html#java.awt.font.NumericShaper)

| **Field Summary** | |
| --- | --- |
| static int | [**ALL\_RANGES**](http://docs.google.com/java/awt/font/NumericShaper.html#ALL_RANGES)            Identifies all ranges, for full contextual shaping. |
| static int | [**ARABIC**](http://docs.google.com/java/awt/font/NumericShaper.html#ARABIC)            Identifies the ARABIC range and decimal base. |
| static int | [**BENGALI**](http://docs.google.com/java/awt/font/NumericShaper.html#BENGALI)            Identifies the BENGALI range and decimal base. |
| static int | [**DEVANAGARI**](http://docs.google.com/java/awt/font/NumericShaper.html#DEVANAGARI)            Identifies the DEVANAGARI range and decimal base. |
| static int | [**EASTERN\_ARABIC**](http://docs.google.com/java/awt/font/NumericShaper.html#EASTERN_ARABIC)            Identifies the ARABIC range and ARABIC\_EXTENDED decimal base. |
| static int | [**ETHIOPIC**](http://docs.google.com/java/awt/font/NumericShaper.html#ETHIOPIC)            Identifies the ETHIOPIC range and decimal base. |
| static int | [**EUROPEAN**](http://docs.google.com/java/awt/font/NumericShaper.html#EUROPEAN)            Identifies the Latin-1 (European) and extended range, and Latin-1 (European) decimal base. |
| static int | [**GUJARATI**](http://docs.google.com/java/awt/font/NumericShaper.html#GUJARATI)            Identifies the GUJARATI range and decimal base. |
| static int | [**GURMUKHI**](http://docs.google.com/java/awt/font/NumericShaper.html#GURMUKHI)            Identifies the GURMUKHI range and decimal base. |
| static int | [**KANNADA**](http://docs.google.com/java/awt/font/NumericShaper.html#KANNADA)            Identifies the KANNADA range and decimal base. |
| static int | [**KHMER**](http://docs.google.com/java/awt/font/NumericShaper.html#KHMER)            Identifies the KHMER range and decimal base. |
| static int | [**LAO**](http://docs.google.com/java/awt/font/NumericShaper.html#LAO)            Identifies the LAO range and decimal base. |
| static int | [**MALAYALAM**](http://docs.google.com/java/awt/font/NumericShaper.html#MALAYALAM)            Identifies the MALAYALAM range and decimal base. |
| static int | [**MONGOLIAN**](http://docs.google.com/java/awt/font/NumericShaper.html#MONGOLIAN)            Identifies the MONGOLIAN range and decimal base. |
| static int | [**MYANMAR**](http://docs.google.com/java/awt/font/NumericShaper.html#MYANMAR)            Identifies the MYANMAR range and decimal base. |
| static int | [**ORIYA**](http://docs.google.com/java/awt/font/NumericShaper.html#ORIYA)            Identifies the ORIYA range and decimal base. |
| static int | [**TAMIL**](http://docs.google.com/java/awt/font/NumericShaper.html#TAMIL)            Identifies the TAMIL range and decimal base. |
| static int | [**TELUGU**](http://docs.google.com/java/awt/font/NumericShaper.html#TELUGU)            Identifies the TELUGU range and decimal base. |
| static int | [**THAI**](http://docs.google.com/java/awt/font/NumericShaper.html#THAI)            Identifies the THAI range and decimal base. |
| static int | [**TIBETAN**](http://docs.google.com/java/awt/font/NumericShaper.html#TIBETAN)            Identifies the TIBETAN range and decimal base. |

| **Method Summary** | |
| --- | --- |
| boolean | [**equals**](http://docs.google.com/java/awt/font/NumericShaper.html#equals(java.lang.Object))([Object](http://docs.google.com/java/lang/Object.html) o)            Returns true if the specified object is an instance of NumericShaper and shapes identically to this one. |
| static [NumericShaper](http://docs.google.com/java/awt/font/NumericShaper.html) | [**getContextualShaper**](http://docs.google.com/java/awt/font/NumericShaper.html#getContextualShaper(int))(int ranges)            Returns a contextual shaper for the provided unicode range(s). |
| static [NumericShaper](http://docs.google.com/java/awt/font/NumericShaper.html) | [**getContextualShaper**](http://docs.google.com/java/awt/font/NumericShaper.html#getContextualShaper(int,%20int))(int ranges, int defaultContext)            Returns a contextual shaper for the provided unicode range(s). |
| int | [**getRanges**](http://docs.google.com/java/awt/font/NumericShaper.html#getRanges())()            Returns an int that ORs together the values for all the ranges that will be shaped. |
| static [NumericShaper](http://docs.google.com/java/awt/font/NumericShaper.html) | [**getShaper**](http://docs.google.com/java/awt/font/NumericShaper.html#getShaper(int))(int singleRange)            Returns a shaper for the provided unicode range. |
| int | [**hashCode**](http://docs.google.com/java/awt/font/NumericShaper.html#hashCode())()            Returns a hash code for this shaper. |
| boolean | [**isContextual**](http://docs.google.com/java/awt/font/NumericShaper.html#isContextual())()            Returns a boolean indicating whether or not this shaper shapes contextually. |
| void | [**shape**](http://docs.google.com/java/awt/font/NumericShaper.html#shape(char%5B%5D,%20int,%20int))(char[] text, int start, int count)            Converts the digits in the text that occur between start and start + count. |
| void | [**shape**](http://docs.google.com/java/awt/font/NumericShaper.html#shape(char%5B%5D,%20int,%20int,%20int))(char[] text, int start, int count, int context)            Converts the digits in the text that occur between start and start + count, using the provided context. |
| [String](http://docs.google.com/java/lang/String.html) | [**toString**](http://docs.google.com/java/awt/font/NumericShaper.html#toString())()            Returns a String that describes this shaper. |

| **Methods inherited from class java.lang.**[**Object**](http://docs.google.com/java/lang/Object.html) |
| --- |
| [clone](http://docs.google.com/java/lang/Object.html#clone()), [finalize](http://docs.google.com/java/lang/Object.html#finalize()), [getClass](http://docs.google.com/java/lang/Object.html#getClass()), [notify](http://docs.google.com/java/lang/Object.html#notify()), [notifyAll](http://docs.google.com/java/lang/Object.html#notifyAll()), [wait](http://docs.google.com/java/lang/Object.html#wait()), [wait](http://docs.google.com/java/lang/Object.html#wait(long)), [wait](http://docs.google.com/java/lang/Object.html#wait(long,%20int)) |

| **Field Detail** |
| --- |

### EUROPEAN

public static final int **EUROPEAN**

Identifies the Latin-1 (European) and extended range, and Latin-1 (European) decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.EUROPEAN)

### ARABIC

public static final int **ARABIC**

Identifies the ARABIC range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.ARABIC)

### EASTERN\_ARABIC

public static final int **EASTERN\_ARABIC**

Identifies the ARABIC range and ARABIC\_EXTENDED decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.EASTERN_ARABIC)

### DEVANAGARI

public static final int **DEVANAGARI**

Identifies the DEVANAGARI range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.DEVANAGARI)

### BENGALI

public static final int **BENGALI**

Identifies the BENGALI range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.BENGALI)

### GURMUKHI

public static final int **GURMUKHI**

Identifies the GURMUKHI range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.GURMUKHI)

### GUJARATI

public static final int **GUJARATI**

Identifies the GUJARATI range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.GUJARATI)

### ORIYA

public static final int **ORIYA**

Identifies the ORIYA range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.ORIYA)

### TAMIL

public static final int **TAMIL**

Identifies the TAMIL range and decimal base. Tamil does not have a decimal digit 0 so Latin-1 (European) 0 is used.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.TAMIL)

### TELUGU

public static final int **TELUGU**

Identifies the TELUGU range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.TELUGU)

### KANNADA

public static final int **KANNADA**

Identifies the KANNADA range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.KANNADA)

### MALAYALAM

public static final int **MALAYALAM**

Identifies the MALAYALAM range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.MALAYALAM)

### THAI

public static final int **THAI**

Identifies the THAI range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.THAI)

### LAO

public static final int **LAO**

Identifies the LAO range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.LAO)

### TIBETAN

public static final int **TIBETAN**

Identifies the TIBETAN range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.TIBETAN)

### MYANMAR

public static final int **MYANMAR**

Identifies the MYANMAR range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.MYANMAR)

### ETHIOPIC

public static final int **ETHIOPIC**

Identifies the ETHIOPIC range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.ETHIOPIC)

### KHMER

public static final int **KHMER**

Identifies the KHMER range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.KHMER)

### MONGOLIAN

public static final int **MONGOLIAN**

Identifies the MONGOLIAN range and decimal base.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.MONGOLIAN)

### ALL\_RANGES

public static final int **ALL\_RANGES**

Identifies all ranges, for full contextual shaping.

**See Also:**[Constant Field Values](http://docs.google.com/constant-values.html#java.awt.font.NumericShaper.ALL_RANGES)

| **Method Detail** |
| --- |

### getShaper

public static [NumericShaper](http://docs.google.com/java/awt/font/NumericShaper.html) **getShaper**(int singleRange)

Returns a shaper for the provided unicode range. All Latin-1 (EUROPEAN) digits are converted to the corresponding decimal unicode digits.

**Parameters:**singleRange - the specified Unicode range **Returns:**a non-contextual numeric shaper **Throws:** [IllegalArgumentException](http://docs.google.com/java/lang/IllegalArgumentException.html) - if the range is not a single range

### getContextualShaper

public static [NumericShaper](http://docs.google.com/java/awt/font/NumericShaper.html) **getContextualShaper**(int ranges)

Returns a contextual shaper for the provided unicode range(s). Latin-1 (EUROPEAN) digits are converted to the decimal digits corresponding to the range of the preceding text, if the range is one of the provided ranges. Multiple ranges are represented by or-ing the values together, such as, NumericShaper.ARABIC | NumericShaper.THAI. The shaper assumes EUROPEAN as the starting context, that is, if EUROPEAN digits are encountered before any strong directional text in the string, the context is presumed to be EUROPEAN, and so the digits will not shape.

**Parameters:**ranges - the specified Unicode ranges **Returns:**a shaper for the specified ranges

### getContextualShaper

public static [NumericShaper](http://docs.google.com/java/awt/font/NumericShaper.html) **getContextualShaper**(int ranges,  
 int defaultContext)

Returns a contextual shaper for the provided unicode range(s). Latin-1 (EUROPEAN) digits will be converted to the decimal digits corresponding to the range of the preceding text, if the range is one of the provided ranges. Multiple ranges are represented by or-ing the values together, for example, NumericShaper.ARABIC | NumericShaper.THAI. The shaper uses defaultContext as the starting context.

**Parameters:**ranges - the specified Unicode rangesdefaultContext - the starting context, such as NumericShaper.EUROPEAN **Returns:**a shaper for the specified Unicode ranges. **Throws:** [IllegalArgumentException](http://docs.google.com/java/lang/IllegalArgumentException.html) - if the specified defaultContext is not a single valid range.

### shape

public void **shape**(char[] text,  
 int start,  
 int count)

Converts the digits in the text that occur between start and start + count.

**Parameters:**text - an array of characters to convertstart - the index into text to start convertingcount - the number of characters in text to convert **Throws:** [IndexOutOfBoundsException](http://docs.google.com/java/lang/IndexOutOfBoundsException.html) - if start or start + count is out of bounds [NullPointerException](http://docs.google.com/java/lang/NullPointerException.html) - if text is null

### shape

public void **shape**(char[] text,  
 int start,  
 int count,  
 int context)

Converts the digits in the text that occur between start and start + count, using the provided context. Context is ignored if the shaper is not a contextual shaper.

**Parameters:**text - an array of charactersstart - the index into text to start convertingcount - the number of characters in text to convertcontext - the context to which to convert the characters, such as NumericShaper.EUROPEAN **Throws:** [IndexOutOfBoundsException](http://docs.google.com/java/lang/IndexOutOfBoundsException.html) - if start or start + count is out of bounds [NullPointerException](http://docs.google.com/java/lang/NullPointerException.html) - if text is null [IllegalArgumentException](http://docs.google.com/java/lang/IllegalArgumentException.html) - if this is a contextual shaper and the specified context is not a single valid range.

### isContextual

public boolean **isContextual**()

Returns a boolean indicating whether or not this shaper shapes contextually.

**Returns:**true if this shaper is contextual; false otherwise.

### getRanges

public int **getRanges**()

Returns an int that ORs together the values for all the ranges that will be shaped.

For example, to check if a shaper shapes to Arabic, you would use the following:

if ((shaper.getRanges() & shaper.ARABIC) != 0) { ...

**Returns:**the values for all the ranges to be shaped.

### hashCode

public int **hashCode**()

Returns a hash code for this shaper.

**Overrides:**[hashCode](http://docs.google.com/java/lang/Object.html#hashCode()) in class [Object](http://docs.google.com/java/lang/Object.html) **Returns:**this shaper's hash code.**See Also:**[Object.hashCode()](http://docs.google.com/java/lang/Object.html#hashCode())

### equals

public boolean **equals**([Object](http://docs.google.com/java/lang/Object.html) o)

Returns true if the specified object is an instance of NumericShaper and shapes identically to this one.

**Overrides:**[equals](http://docs.google.com/java/lang/Object.html#equals(java.lang.Object)) in class [Object](http://docs.google.com/java/lang/Object.html) **Parameters:**o - the specified object to compare to this NumericShaper **Returns:**true if o is an instance of NumericShaper and shapes in the same way; false otherwise.**See Also:**[Object.equals(java.lang.Object)](http://docs.google.com/java/lang/Object.html#equals(java.lang.Object))

### toString

public [String](http://docs.google.com/java/lang/String.html) **toString**()

Returns a String that describes this shaper. This method is used for debugging purposes only.

**Overrides:**[toString](http://docs.google.com/java/lang/Object.html#toString()) in class [Object](http://docs.google.com/java/lang/Object.html) **Returns:**a String describing this shaper.

| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/NumericShaper.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/awt/font/MultipleMaster.html)   [**NEXT CLASS**](http://docs.google.com/java/awt/font/OpenType.html) | [**FRAMES**](http://docs.google.com/index.html?java/awt/font/NumericShaper.html)    [**NO FRAMES**](http://docs.google.com/NumericShaper.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: NESTED | [FIELD](#3znysh7) | CONSTR | [METHOD](#2et92p0) | DETAIL: [FIELD](#3dy6vkm) | CONSTR | [METHOD](#3as4poj) |

[Submit a bug or feature](http://bugs.sun.com/services/bugreport/index.jsp)

For further API reference and developer documentation, see [Java SE Developer Documentation](http://docs.google.com/webnotes/devdocs-vs-specs.html). That documentation contains more detailed, developer-targeted descriptions, with conceptual overviews, definitions of terms, workarounds, and working code examples.

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