SCROOGEXHTML
RTF CONVERTER LIBRARIES

Getting started with

ScroogeXHTML for the Java™ platform

Version 7.2

This documentation is work in progress

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Contents

Introduction

Features

ScroogeXHTML for the Java™ platform converts text attributes including background and highlight colors, paragraph attributes including alignment (left, right, centered, justified) and paragraph indent (left, right, first line) and simple numbered or unnumbered lists.

Unicode conversion allows international documents, including simplified and traditional Chinese, Korean and Japanese.

CSS and default font settings allow to create optimized documents.

Limitations

The library supports a limited subset of the RTF standard. If you are unsure about support for a specific conversion feature, please contact us.

Some of the document elements which will not be converted are:

- Tabulators (a tab character will be replaced by a sequence of non breaking spaces)

Embedded images

The library extracts raw data of embedded images. The conversion of raw data from WMF or other not web-ready formats to a web-ready format (e. g., PNG or JPG) requires third-party libraries. Habarisoft can not give recommendations for specific graphic libraries.

API documentation

The JavaDoc API documentation is located in the installation folder /apidocs.

It is also contained in the ScroogeXHTML-7.2.0-javadoc.jar.

Installation

Requirements

ScroogeXHTML for the Java™ platform requires

- Java SE 7 or 8[1]
- SLF4J (logging framework)
- JDK 7 for development

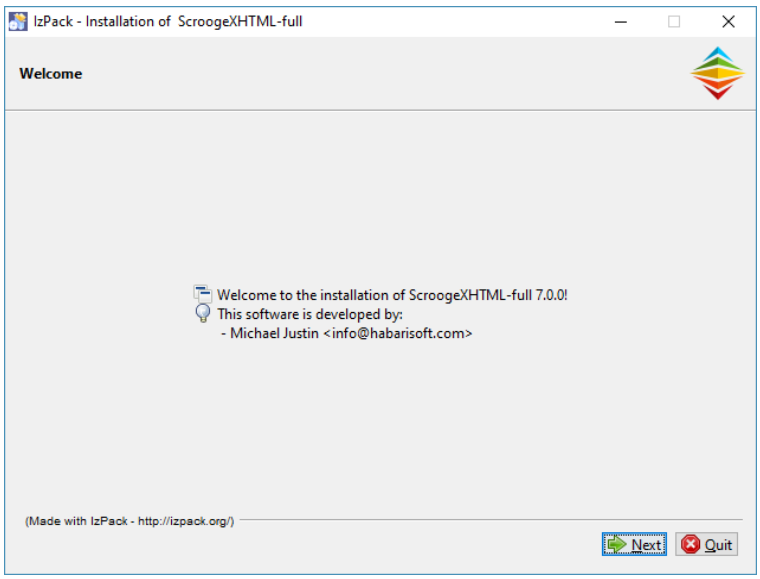
Installation steps

The library installer is an executable JAR[2] file created with izPack[3] and works on Microsoft Windows™, Linux™, Solaris™ and Mac OS X™. A Java Run-time Environment is required to execute it.

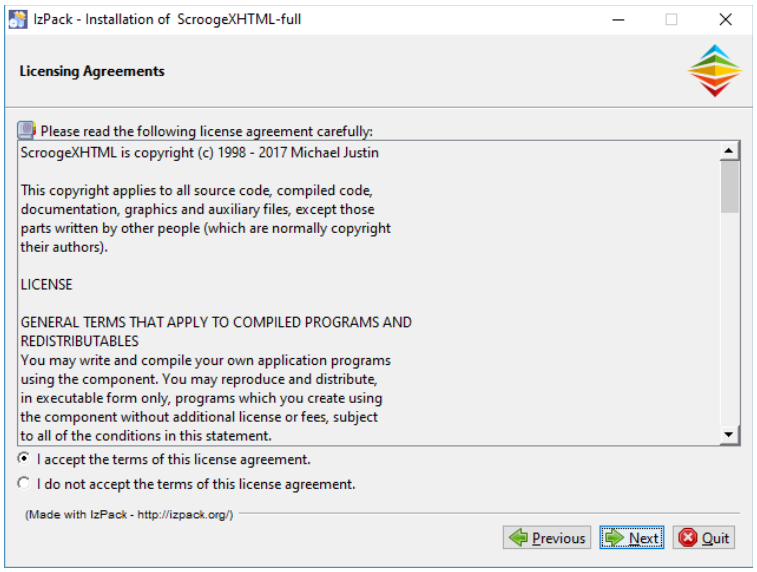
To launch the installer, double-click it. The installer will guide you through the installation steps.

The installation begins with a language selection dialog.

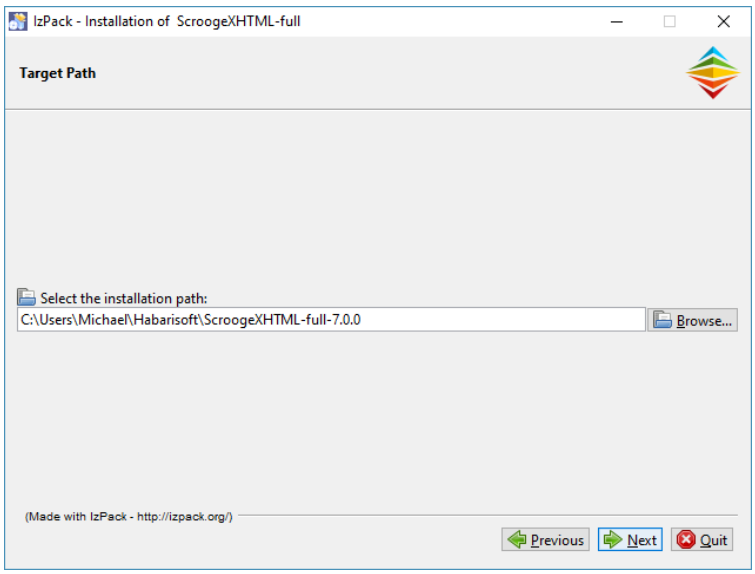
1 The library has not been tested with Java 9
2 https://docs.oracle.com/javase/7/docs/technotes/guides/jar/jarGuide.html
3 http://izpack.org/



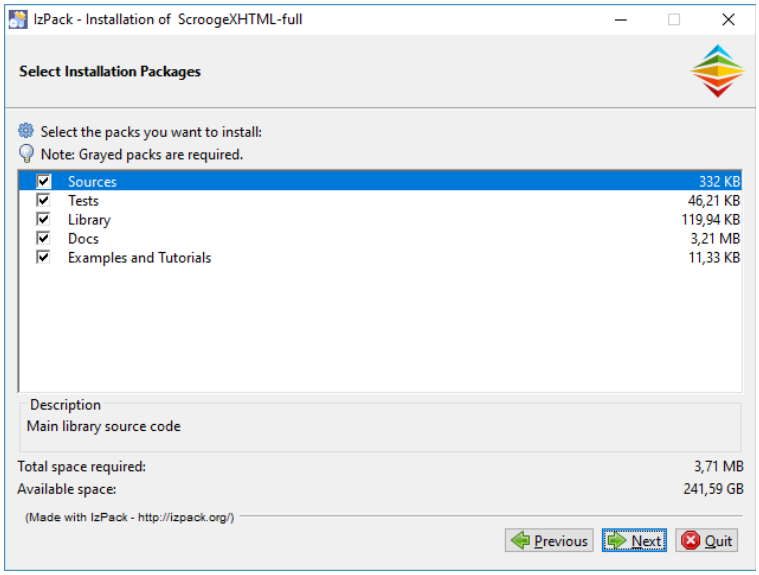
Welcome Page



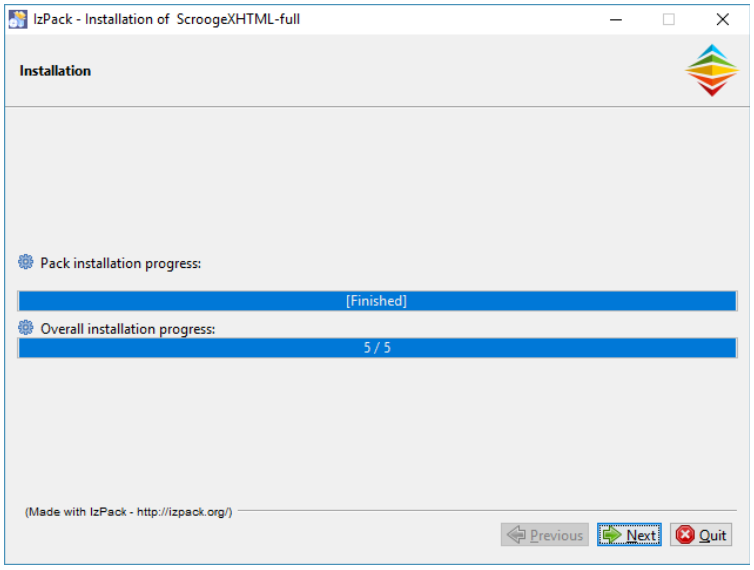
Licensing Agreements



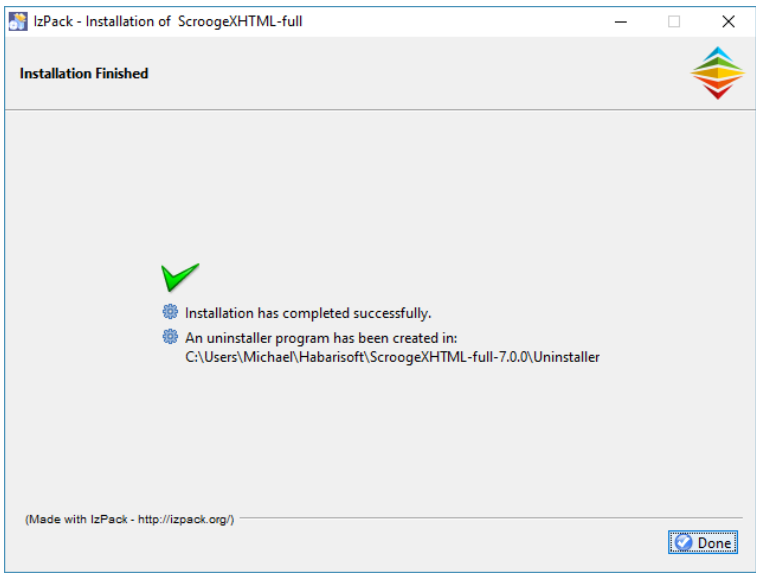
Target Path



Select Installation Packages



Installation



Installation finished

Depending on your choice, an uninstaller will be installed in a sub-directory of the installation folder.

Maven dependency

Maven

```
<dependencies>
  ...
  <dependency>
    <groupId>com.habarisoft</groupId>
    <artifactId>ScroogeXHTML</artifactId>
    <version>7.2.0</version>
  </dependency>
  ...
</dependencies>
```

See also "IDE integration in Maven projects"

Gradle dependency

Gradle

```
dependencies {
    ...
    implementation 'com.habarisoft:ScroogeXHTML:7.2.0'
    ...
}
```

Directory structure

```
<inst>

\- apidocs                                      JavaDoc documentation
   \- ...
\- docs
   \- ScroogeXHTMLGettingStarted.pdf            This document
\- src
  \- main
     \- java
        \- com
           \- habarisoft
              \- scroogexhtml                   Library source code
  \- test
     \- java
        \- com
           \- habarisoft
              \- scroogexhtml                   Test source code
           \- scroogexhtml
              \- example                        Example code
              \- tutorial                       Tutorial code
\- Uninstaller
   \- uninstaller.jar
license.txt
ScroogeXHTML-7.2.0.jar                      Precompiled library
ScroogeXHTML-7.2.0-javadoc.jar              Compressed JavaDoc
ScroogeXHTML-7.2.0-sources.jar              Compressed source code
```

New in version 7.2

Changes in standalone documents

These changes apply to complete HTML5 / XHTML documents generated with AddOuterHTML set to true (see section Embedding HTML).

Added XML Declaration

The XML declaration will be added to XHTML documents if the charset is not UTF-8.

Code example

```
scrooge.setDocumentType(DocumentType.XHTML);
String actual = scrooge.convert(inRtf, StandardCharsets.ISO_8859_1);
```

XHTML code

```
<?xml version="1.0" encoding="ISO-8859-1" standalone="no"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
…
</html>
```

Changed: header <style> element

- Removed the attribute `type=”text/css”` from the header `<style>` element for HTML5 documents.

Note	this fixes the W3C HTML validator warning: "The type attribute for the style element is not needed and should be omitted"

- Styles are no longer enclosed in HTML comments (`<!-- … -->`)
- Changed `BODY {...` to lowercase `body {...` in auto-generated CSS code
- The `<style>` element includes comments before auto-generated and custom styles

The following example illustrates the changes:[4]

Before

```
<style type="text/css">
  BODY {font-family:Arial,Helvetica,sans-serif;...}
  table {
    border-spacing: 0;
    border-collapse: collapse;
  }
</style>
```

Now

```
<style>
  <!--generated styles-->
  body {font-family:Arial,Helvetica,sans-serif;...}
  <!--user-defined styles-->
  table {
    border-spacing: 0;
    border-collapse: collapse;
  }
</style>
```

Table border conversion

The library now uses a class attribute for bordered tables, this allows using CSS for result document styling. See section Supported border style attributes for details.

Note	This fixes the W3C HTML validator warning: "The border attribute on the table element is presentational markup".

4 examples are formatted for readability, actual indenting differs

Migration note: if your documents still requires border="1" for bordered tables, your code must set the new conversion option USE_TABLE_BORDER_ATTRIBUTE

Code example

```
scrooge.setOutputProperty(ConversionKeys.USE_TABLE_BORDER_ATTRIBUTE,
"yes");
```

Table cell alignment

Added support for vertical alignment in table cells.

Documentation

The Getting Started PDF contains a new section on CSS (Cascading Style Sheet) usage which includes a list of "Suggested CSS code fragments"

Internal code changes

Fixed Findbugs warnings, including reliance on default encoding in the ScroogeXHTML `convert` methods.

The affected methods are:

```
public void convert(final File rtfFile, final File outFile, final Charset
charset)

public String convert(final File rtfFile)
```

These methods used a `FileReader` to open the RTF file. The new versions uses a `FileInputStream` and opens the RTF file as ASCII.

```
public String convert(final ByteArrayInputStream rtf)
```

This method used an `InputStreamReader` to read the RTF without specifying the encoding of the byte array. The new version specifies uses `new InputStreamReader(rtf, StandardCharsets.US_ASCII)`

Font size CSS

For large font sizes, the auto-generated CSS contained thousand separators (for example: `font-size:1,200pt;`). This has been fixed.

Conversion options

Overview

This table lists available conversion options, their valid values, defaults, and which area of the conversion they affect.

Key	Values	Area
SUPPORT_LIST_TABLE[5]	yes | **no**	Lists
SUPPORT_STAR_PN[6]	yes | **no**	Lists
SUPPORT_MULTILEVEL[7]	yes | **no**	Lists
CONVERT_HEADERS_AND_FOOTERS[8]	yes | **no**	Text
CONVERT_PARAGRAPH_BORDERS[9]	yes | **no**	Paragraphs
USE_TABLE_BORDER_ATTRIBUTE[10]	yes | **no**	Tables

SUPPORT_LIST_TABLE

This conversion option enables support for the RTF list table (Word 97); the value must be "yes" or "no". The list table is a section in the RTF header which stores styles for numbered and unnumbered lists. The document then refers to a specific style by its id.

5 Experimental, introduced in version 5.3 (UseListTable property)
6 Experimental, introduced in 7.0
7 Experimental, introduced in 7.0
8 Since 6.3.0
9 Since 7.0 it is possible to disable paragraph border box conversion (introduced in version 6.5)
10 Since 7.2.0

Note	This option is experimental because some RTF writers generate malformed list tables. Use with caution.

SUPPORT_STAR_PN

This conversion option enables support for list formatting based on `\*\pn` RTF tokens (Word 6.0/95 RTF); the value must be “yes” or “no”.

Note	This option is experimental. Use with caution.

SUPPORT_MULTILEVEL

This conversion option enables support for multilevel numbered and unnumbered lists in conjunction with `SUPPORT_LIST_TABLE` (Word 97); the value must be “yes” or “no”.

Note	This option is experimental because some RTF writers generate malformed list tables. Use with caution.

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// enable experimental list table support
scrooge.setOutputProperty(ConversionKeys.SUPPORT_LIST_TABLE, "yes");

// enable experimental multi-level support
scrooge.setOutputProperty(ConversionKeys.SUPPORT_MULTILEVEL, "yes");

// run the conversion
```

CONVERT_HEADERS_AND_FOOTERS

This conversion option enables support for header and footer text conversion. By default header and footer will not appear in the output document; the value must be “yes” or “no”.

Note	This option is experimental. Use with caution.

CONVERT_PARAGRAPH_BORDERS

This conversion option enables support for paragraphs which are formatted with a simple border box; the value must be “yes” or “no”.

Note	This option is experimental. Use with caution.

USE_TABLE_BORDER_ATTRIBUTE

This conversion option specifies whether the converter should use the `border="1"` attribute instead of the `class="table table-bordered"` attribute for bordered tables; the value must be “yes” or “no”.

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// enable the border="1" attribute
scrooge.setOutputProperty(ConversionKeys.USE_TABLE_BORDER_ATTRIBUTE,
"yes");

// run the conversion
```

Tutorial 1: simple conversion

What it does

This example converts a hard-coded RTF document to a HTML5 document named 'tutorial-1.html' in the current directory.

It sets the `AddOuterHTML` property which causes generation of surrounding HTML head and body code. The converted HTML is inserted within the body of the document.

Java code

Code example

```
public class Tutorial1 {

    public static final void main(String[] args) throws IOException {

        String rtf = "{\\rtf1 {\\b bold \\i Bold Italic \\i0 Bold
again} \\par}";

        // create a converter instance
        ScroogeXHTML scrooge = new ScroogeXHTML();

        // configure conversion options
        scrooge.setAddOuterHTML(true);

        // convert RTF and write HTML to file
        scrooge.convert(rtf, new File("tutorial-1.html"));

    }
}
```

Compile and run this class, and open the result document in a web browser or a text editor.

Result HTML

HTML

```
<!DOCTYPE html>
<html>
  <head>
    <META http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>Untitled document</title>
    <meta content="ScroogeXHTML for the Java(tm) platform 7.2.0"
name="generator">
  </head>
  <body>
    <p>
      <span style="font-weight:bold;">bold </span><span style="font-
weight:bold;font-style:italic;">Bold Italic </span><span style="font-
weight:bold;">Bold again</span>
    </p>
  </body>
</html>
```

Source code

The full source code is included in the `com.scroogexhtml.tutorial` package of the library unit tests.

Tutorial 2: additional HTML code

What it does

This example converts a hard-coded RTF document to a HTML5 document named 'tutorial-2.html' in the current directory.

It shows how a HTML fragment generated by the converter can be embedded in other HTML code and then saved to a file.

Java code

Code example

```
public class Tutorial2 {

    public static final void main(String[] args) throws IOException {

        String rtf = "{\\rtf1 Hello {\\b World} from ScroogeXHTML \\par}";

        // create a converter instance
        ScroogeXHTML scrooge = new ScroogeXHTML();

        // convert RTF and store HTML in String variable
        String converted = scrooge.convert(rtf);

        // wrap with required HTML5 elements
        String html = "<!DOCTYPE html>\n"
                + "<html>\n"
                + "  <head>\n"
                + "    <title>\n"
                + "      Untitled document\n"
                + "    </title>\n"
                + "    <meta http-equiv=\"content-type\"
content=\"text/html; charset=UTF-8\">\n"
                + "  </head>\n"
                + "  <body>\n"
                + "    <p>additional paragraph before</p>\n"
                + converted
                + "    <p>additional paragraph after</p>\n"
                + "  </body>\n"
                + "</html>";

        try {
            writeHtmlFile(html);
        } catch (IOException ex) {
            Logger.getLogger(Tutorial2.class.getName()).log(Level.SEVERE,
null, ex);
        }
    }

    private static void writeHtmlFile(String html) throws IOException {
        OutputStream os = new FileOutputStream(new File("tutorial-
2.html"));
        Writer writer = new OutputStreamWriter(os,
StandardCharsets.UTF_8);
        try (BufferedWriter outWriter = new BufferedWriter(writer
        )) {
            outWriter.write(html);
        }
    }
}
```

Compile and run this class, and open the result document in a web browser or a text editor.

Result HTML

HTML

```
<!DOCTYPE html>
<html>
  <head>
    <title>
      Untitled document
    </title>
    <meta http-equiv="content-type" content="text/html; charset=UTF-8">
  </head>
  <body>
    <p>additional paragraph before</p>
  <p>Hello <span style="font-weight:bold;">World</span> from ScroogeXHTML
</p>
    <p>additional paragraph after</p>
  </body>
</html>
```

Source code

The full source code is included in the `com.scroogexhtml.tutorial` package of the library unit tests.

Embedding HTML

Usage of AddOuterHTML

If you convert RTF using the methods

- `void convert(String rtf)`
- `void convert(String rtf, Charset charset)`
- `String convert(final ByteArrayInputStream rtf)`

the converter by default returns only the content of the document **body element**, without enclosing it in `<html>…<body>…</body></html>` tags. This fragment can be used in a larger document.

The property `AddOuterHTML` controls whether the enclosing HTML will be generated by the converter. Use `setAddOuterHTML(true)` to switch it on.

For conversions to files, the `AddOuterHTML` property must always be set to `true`. If the property is `false`, the converter will throw a `UnsupportedOperationException`.

Character encoding and document type

Choosing the correct charset[11] and document type (HTML5 or XHTML) for the result document is also important.

Note	Always specify the result document charset when you save the HTML to a file, or write it to a HTTP response, to avoid encoding problems on the receiver side

11 https://docs.oracle.com/javase/7/docs/api/java/nio/charset/Charset.html

Hypertext support

Overview

Hyperlink field detection

Many RTF documents use specific hidden fields to store the Hyperlink target and the corresponding display text.

To enable hyperlink conversion of these RTF hyperlink fields, in addition to

```
setConvertHyperlinks(true)
```

also use

```
setConvertFields(true).
```

If a hidden field does not specify a hyperlink, the converter will only insert the display text (the 'result value' of the hidden field) in the output document.

Table conversion

Overview

ScroogeXHTML for the Java™ platform supports conversion of **simple** RTF tables to HTML.

The library does not convert tables by default. By default, tables in the RTF input document will be converted to text paragraphs.

To enable conversion of simple tables, set the ConvertTables property to true.

Code example

```
scrooge.setConvertTables(true);
```

Note	As some RTF document writers create highly complex RTF code for tables, conversion results may not be perfect.

Automatic detection of table borders

The library uses a simple algorithm to switch on table borders:

- if the first row of a table has more than two borders (for example left, top and bottom border), the result table will contain the border style class (or the border attribute, see below)

Note	The library supports only simple bordering of all cells, it does not support tables with different borders in individual rows or cells

Supported border style attributes

CSS class attribute

The result HTML for a bordered table will use the attribute **class=”table table-bordered”** as shown in the example below:

Code example

```
<table class=”table table-bordered”>
```

It is possible to use CSS to control the visual design of bordered tables (see below).

How to: modify the table border style

It is possible to use CSS to control the visual design of bordered tables. The following code adds the CSS which will render a bordered table similar to the default style (the style which browsers use if a table has the border=”1” attribute).

Code example

```
scrooge.setStyleSheetInclude(
                  "table.table-bordered {\n"
                + "    border-width: 1px;\n"
                + "    border-spacing: 2px;\n"
                + "    border-style: outset;\n"
                + "    border-color: gray;\n"
                + "    border-collapse: separate;\n"
                + "    background-color: white;\n"
                + "}\n"
                + "table.table-bordered td {\n"
                + "    border-width: 1px;\n"
                + "    padding: 1px;\n"
                + "    border-style: inset;\n"
                + "    border-color: gray;\n"
                + "    background-color: white;\n"
                + "}");
```

Traditional HTML bordered attribute

If the converter configuration key “” is set to “no”, the result HTML table will use the attribute **class=”table table-bordered”** as shown in the example below:

Code example

```
<table bordered="1”>
```

Vertical Alignment in Cells

In HTML, the default value for vertical alignment of table cell content is “middle”.[12]

ScroogeXHTML for the Java™ platform assumes that RTF table cell content should be aligned with the top of the cell by default. To keep the output document size small, the conversion adds style elements only for cells which are aligned vertically or with the bottom of the cell.

In order to apply the vertical alignment as the default for table cells, the CSS code `td {vertical-align: top}` must be included.

Code example

```
scrooge.setStyleSheetInclude("td {vertical-align: top;}");
```

12 See https://stackoverflow.com/questions/33487148/

Size optimization

Default Font Properties

Document size can be optimized with the usage of CSS for frequently used font properties which can be set using the `DefaultFontSize`, `DefaultFontName` and `DefaultFontColor` properties.

Setting the `IncludeDefaultFontStyle` property to true then has these effects:

- if `AddOuterHTML` is true, the HTML head section will contain a CSS definition for the default font style
- the converter will create font style attributes only for text parts which differ from the values of the `DefaultFontSize`, `DefaultFontName` and `DefaultFontColor` properties

Example

If most text in the document uses "Arial, 14 pt, black", set the `DefaultFontSize`, `DefaultFontName` and `DefaultFontColor` properties to these values, and set `IncludeDefaultFontStyle` to true.

If the document is converted with AddOuterHTML set to true, the HTML head section will contain the following CSS definition:

Code example

```
<style>
  <!--generated styles-->
  body {font-family:Arial,sans-serif;font-size:14pt;color:#000000}
</style>
```

Picture extraction

PictureAdapter Interface

Picture extraction is activated by assigning a `PictureAdapter` implementation and `setConvertPictures(true)`.

The library includes basic implementations of the `PictureAdapter` interface.

MemoryPictureAdapter

`MemoryPictureAdapter` keeps all extracted picture data in memory and returns hyperlinks to HTTP picture resources, which are then inserted in the result document.

This implementation is useful for web server environments where the server returns the image data back to the client. In the most simple implementation, the server keeps the image data in memory for the duration of a client session, and returns the image data dynamically when the browser requests the image resource URLs. Of course this requires HTTP session management and sufficient memory.

Example for a link element:

Code example

```
<img alt="picture" height="132" width="156" src="image1.png" />
```

The image URLs will be numbered automatically.

The class allows to set a base path with `setBase(String base)`, for example `scrooge.setBase("/images/")`, so that the result URL will be `"/images/image1.png"`.

MemoryPictureAdapterBase64

`MemoryPictureAdapterBase64` extends `MemoryPictureAdapter` but returns Image Data URIs for pictures which do not exceed a given maximum size. For larger images, it will return the external image URL as defined by its super class.

By default, the size threshold is set to 32 kB. The threshold can be set with the `maxSize` constructor argument.

Data URIs are fully supported by most major browsers, and partially supported in Internet Explorer and Microsoft Edge.

Code example

```
scrooge = new ScroogeXHTML();

scrooge.setConvertPictures(true);

PictureAdapter adapter = new MemoryPictureAdapterBase64();

scrooge.setPictureAdapter(adapter);

// run the conversion
...
```

Example for a Data URI link:

Code example

```
<img alt="picture" height="132" width="156"
src="… />
```

Language support

How to set the lang Attribute

Example sets the default language to “en” (English). This adds the `lang` attribute on the html element to “en”.

Code example

```
scrooge = new ScroogeXHTML();
scrooge.setDefaultLanguage("en");
```

Why you should use the `lang` attribute on the `<html>` element

By using `lang`, you get the benefits of hyphen support in your (modern) browser that you otherwise would not get (assuming you use `hyphens: auto` in your CSS).

Add `hypens:auto` in your CSS:

Code example

```
scrooge.setStyleSheetInclude("p {hyphens: auto;}");
```

References

http://blog.adrianroselli.com/2015/01/on-use-of-lang-attribute.html

https://www.w3.org/International/questions/qa-lang-why

Cascading Style Sheets

Suggested CSS code fragments

Code	Reference

`p {`
`  margin-bottom: 0px;`
`  margin-top: 0px;`
`}`
	How can I remove the space between lines?

`p {`
`  hyphens: auto;`
`}`
	Why you should use the lang attribute on the <html> element

`td {`
`  vertical-align: top;`
`}`
	Vertical Alignment in Cells

`<!-- emulate “classic” border style -->`
`table.table-bordered {`
`  border-width: 1px;`
`  border-spacing: 2px;`
`  border-style: outset;`
`  border-color: gray;`
`  border-collapse: separate;`
`  background-color: white;`
`}`
`table.table-bordered td {`
`  border-width: 1px;`
`  padding: 1px;`
`  border-style: inset;`
`  border-color: gray;`
`  background-color: white;`
`}`
	Automatic detection of table borders

Post Processing

Overview: manipulation of the result DOM tree

Technical background

The converter internally uses an XML DOM tree to create the HTML document structure. Before converting the DOM to the result HTML5 string, the converter calls a sequence of post processing handlers, which apply optimizations and custom modifications on the DOM tree. Post processing handlers must implement the `PostProcessListener` interface.

PostProcessListeners property

The converter stores the event handlers in its `PostProcessListeners` property which is a list of `PostProcessListener` implementations.

Performance

Post processing may cause a significant increase of the conversion time.

Example

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// create and add a post processor
PostProcessListener listener = new PostProcessListenerExample();

scrooge.getPostProcessListeners().add(listener);

// run the conversion
...
```

No post processing by default

The converter creates and adds no post process handlers by default (on creation).

The PostProcessListener interface

The converter stores a list of post progress listeners in its `PostProcessListener` property. The listeners implement the `PostProcessListener` interface, which has one method, `postProcess`.

The converter passes an instance of `PostProcessEventObject` to the postProcess method. This event object carries references to the converter and the `org.w3c.dom.Document` instance with the result DOM.

How to: add elements to the HTML head section

This example shows how a post process listener can be used to add a meta date element to the HTML head.

Code example

```
public class HowTo3 {

    public static final void main(String[] args) throws IOException {
        String rtf =
"{\\rtf1\\ansi\\ansicpg1252\\deff0\\deflang1031{\\fonttbl{\\f0\\fnil\\fcha
rset0 Tahoma;}{\\f1\\fnil Tahoma;}}\n"
                + "{\\colortbl ;\\red0\\green0\\blue255;}\n"
                + "\\uc1 \n"
                + "\\pard\\cf1\\ul\\f0\\fs16 example.com\\cf0\\ulnone\\f1"
                + "\\par\n"
                + "}";

        // create a converter instance
        ScroogeXHTML scrooge = new ScroogeXHTML();

        // add post process listener
        scrooge.getPostProcessListeners().add(new PostProcessListener() {
            @Override
            public void postProcess(PostProcessEventObject e) {
                Document doc = e.getDocument();
                Element html = doc.getDocumentElement();
                Node head = html.getFirstChild();

                // add meta date
                Element metaDate = doc.createElement("meta");
                metaDate.setAttribute("name", "date");
                metaDate.setAttribute("content", new Date().toString());
                head.appendChild(metaDate);
            }
        });

        // convert RTF to HTML
        scrooge.setAddOuterHTML(true);
        scrooge.convert(rtf, new File("howto-3.html"));
    }
}
```

How to: fix missing http:// in hyperlinks

Tutorial 3 (included in the unit test folder) converts a RTF documents which contains a simple (blue and underlined formatted) hyperlink.

The hyperlink text does not begin with a valid protocol name such as `http://` and this causes a non functional hyperlink in the result HTML:

HTML

```
<p>
  <a href="example.com">example.com</a>
</p>
```

To fix this, we want to apply post processing code which modifies all `<a>` elements so that they begin with `http://`

The result should be:

HTML

```
<p>
  <a href="http://example.com">example.com</a>
</p>
```

Our solution will use the XPath expression `//a[not(contains(@href, '://'))]` to find all `<a>` elements in the document whose `href` attribute do not contain the character sequence "://".

For all found elements, our code then inserts "http://" in the value of the `href` attribute.

Notes

- this is pure demonstration code
- there is no guarantee that the result `href` value will be a valid internet address

Source code

The following source code example shows the `PostProcessListener` implementation and its `postProcess` method.

The full source code is included in the `com.scroogexhtml.tutorial` package of the library unit tests.

Code example

```
        // create a converter instance
        ScroogeXHTML scrooge = new ScroogeXHTML();

        // we want simple HTML output for this example
        scrooge.setConvertFontSize(false);
        scrooge.setConvertFontName(false);

        scrooge.addPostProcessListener(new StripAttributeLessSpanNodes());

        // enable hyperlink conversion
        scrooge.setConvertHyperlinks(true);

        // add post process listener
        scrooge.getPostProcessListeners().add(new PostProcessListener() {
            @Override
            public void postProcess(PostProcessEventObject e) {
                try {
                    XPathFactory xpathFactory =
XPathFactory.newInstance();
                    // XPath to find hyperlink nodes.
                    XPathExpression xpathExp =
xpathFactory.newXPath().compile(
                            "//a[not(contains(@href, '://'))]");
                    NodeList links = (NodeList)
xpathExp.evaluate(e.getDocument(), XPathConstants.NODESET);
                    for (int i = 0; i < links.getLength(); i++) {
                        Element a = (Element) links.item(i);
                        String href = a.getAttribute("href");
                        a.setAttribute("href", "http://" + href);
                    }
                } catch (XPathExpressionException ex) {

Logger.getLogger(Tutorial3.class.getName()).log(Level.SEVERE, null, ex);
                }
            }
        });

        // convert RTF to HTML
        scrooge.setAddOuterHTML(true);
        scrooge.convert(rtf, new File("tutorial-3.html"));
```

Frequently Asked Questions

Conversion

Why are empty paragraphs not in the result page?

HTML browsers do not show empty/whitespace only `<p>` elements. Example:

RTF view

```
Line 1
Line 2

Line 3
```

will look different in the HTML browser

Browser view

```
Line 1
Line 2
Line 3
```

You can set the `ConvertEmptyParagraphs` property to true. The result HTML then will contain `<br>` or `<br />` instead of empty `<p>` elements, and look as expected.

How can I remove the space between lines?

HTML browsers use default paragraph styles, which will render paragraphs in RTF documents with a bigger space between lines than RTF editors. For example a RTF document which appears like this

RTF view

```
Line 1
Line 2
Line 3
```

will look different in the converted HTML document

Browser view

```
Line 1

Line 2

Line 3
```

Solution:

To remove empty space between lines, define a CSS style for the paragraph element, which sets the margins to 0:

CSS

```
p { margin-bottom:0px;margin-top:0px; }
```

Installation

IDE integration in Maven projects

For NetBeans IDE:

1. In Maven project open "Add dependency" dialog
2. Make up some groupId, artifactId and version and fill them, OK
3. Dependency will be added to the pom.xml and will appear under "Libraries" node of maven project
4. Right-click Lib node and "manually install artifact", fill the path to the jar

The Jar should be installed to local Maven repository with coordinates entered in step 2

For Maven (command line):

http://maven.apache.org/guides/mini/guide-3rd-party-jars-local.html

New in version 7.1

New code page mappings

The RTF code page mapping includes new entries:

- Code page 77 mapped to "MacRoman"
- Code page 78 mapped to "SJIS"
- Code page 79 mapped to "CP950"
- Code page 80 mapped to "MS936"
- Code page 179 mapped to "Cp1256"

Symbol font conversion

The library now converts all printable characters of the Symbol font.

As a side effect, conversion of bullet lists now correctly creates “•” entity for the leading bullet instead of a “·”.

Support for RTF token _

The library converts the RTF token “_” to a non-breaking hyphen (Unicode value \u2011).

Support for RTF \bullet token

The library converts the \bullet token to a • HTML entity or its Unicode value \u2022.

Breaking changes in version 7.0

ConvertFootnotes default value

The default value of the `ConvertFootnotes` property is **false** now to increase the conversion speed.

Important migration note: if you need footnote conversion, set `ConvertFootnotes` to **true** as shown below:

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// footnote conversion is switched off by default in ScroogeXHTML 7.0
scrooge.setConvertFootnotes(true);

// run the conversion
...
```

ConvertHyperlinksForBlueUnderlinedText

The property has been removed as most RTF writers emit hyperlinks encoded as **RTF HYPERLINK** fields.

Hyperlink post processor

The detection and conversion of hyperlinks based on text attributes is still possible with a post processor. An example solution for the conversion of blue and underlined text to hyperlinks is implemented as a post processor (ConvertUnderlinedToHyperlinks).[13]

13 The ConvertUnderlinedToHyperlinks class is provided as unsupported example code

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// add the post processor
PostProcessListener l = new ConvertUnderlinedToHyperlinks("#0000ff");
scrooge.getPostProcessListeners().add(l);

// run the conversion
...
```

MetaDateAuto removed

The property was deprecated and has been removed in this version.

No default post process listeners

The converter now does not add any post process listeners by default (on creation) to increase the conversion speed.

The execution of post process listeners may take significant time. Adding post process listeners explicitly in client code (when needed) is more transparent than adding default listeners internally in the converter.

Migration note: if you upgrade from ScroogeXHTML 6.3.0 or later to 7.0, you may add the default progress listeners with this code:

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// no post processor are registered by default in ScroogeXHTML 7.0

// add default post processors
scrooge.addDefaultListeners();

// run the conversion
...
```

Progress listener removed

Progress listener methods and properties have been removed to speed up the conversion and to keep the converter library size small.

UseListTable default value

The default value of `UseListTable` is **false** now, since tests showed that many RTF writers use the list table in incorrect or inconsistent ways, which caused low quality conversion results.

In the new default configuration (list table support switched off), conversion results visually match the original document better.

For the reasons described above, the UseListTable property also has been **deprecated** (see below). The new way to enable list table support is shown below:

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// list table support is switched off by default in ScroogeXHTML 7.0

// UseListTable is deprecated since 7.0
// scrooge.setUseListTable(true);

// enable RTF list table support when needed:
scrooge.setOutputProperty(ConversionKeys.SUPPORT_LIST_TABLE, "yes");
```

Migration note: the document size increases when list table support is turned off.

Migration from earlier versions

If you migrate from version 6.6 or newer to 7.0, and wish to initialize the converter with compatible default property values, you may use this code:

```
ScroogeXHTML scrooge = new ScroogeXHTML();

scrooge.setOutputProperty(CONVERT_PARAGRAPH_BORDERS, "yes");
scrooge.setOutputProperty(SUPPORT_STAR_PN, "yes");
scrooge.setOutputProperty(SUPPORT_LIST_TABLE, "yes");
scrooge.addDefaultListeners();
scrooge.setConvertFootnotes(true);
```

New in version 7.0

List conversion

Activation of list table support

Starting with version 7.0, the property UseListTable is deprecated. To enable list table support[14], set the OutputProperty SUPPORT_LIST_TABLE to “yes”.

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// enable RTF list table support
scrooge.setOutputProperty(ConversionKeys.SUPPORT_LIST_TABLE, "yes");

// run the conversion
...
```

Multi-level list support

Multi-level bullet list conversion support is now available when list table support is enabled.

14 List table support is an unsupported experimental feature

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();
// enable experimental list table support
scrooge.setOutputProperty(ConversionKeys.SUPPORT_LIST_TABLE, "yes");
// enable experimental multi-level support
scrooge.setOutputProperty(ConversionKeys.SUPPORT_MULTILEVEL, "yes");
// run the conversion
...
```

Numbered lists with roman numbers

Numbered lists with roman numbers are now supported when list table support is enabled.

Experimental feature notice

Important:

- List table support and multi-level list support are experimental features
- If you use them, be aware that not all RTF writers generate correct and consistent list code
- Experimental features may be removed or significantly changed in future releases

Wingdings bullets

The library includes an example post processor which replaces Wingdings bullets with web-safe bullets.

The listener has been designed for usage with RTF generated by WPTools. Other RTF writers might need additional configuration and/or modifications of the listener.

The listener is included with source code[15].

15 The ReplaceWingdingsBullets class is provided as unsupported example code

Code example

```
// create a converter instance
ScroogeXHTML scrooge = new ScroogeXHTML();

// non-web-safe bullet used by WPTools 7.2
String badBullet = "Ÿ";

// web-safe bullet
char bullet = '\u2022';

// add the post processor
PostProcessListener l = new ReplaceWingdingsBullets(bullet, badBullet);
scrooge.getPostProcessListeners().add(l);

// run the conversion
...
```

Table conversion

- table border (whole table border) detection improved
- (since 6.6) table cell background color

Other improvements

Paragraph alignment conversion

New property ConvertAlignment (default true)

Paragraph border conversion

Paragraph border conversion is enabled by default. To switch it off, use CONVERT_PARAGRAPH_BORDERS.

Code example

```
scrooge.setOutputProperty(ConversionKeys.CONVERT_PARAGRAPH_BORDERS, "no");
```

Improved support for Japanese text

The range of supported symbols for Japanese text is extended.

JDK 8 Javadoc

Javadoc has been cleaned up to be compatible with the new JDK 8 Doclet.

JavaBean manifest entry

The manifest now includes the JavaBean indicator (JavaBean: true).

Performance improvements

- faster ConvertEmptyParagraphs method
- (since 6.7) faster initialization of DOM tree transformation
- (since 6.6) faster RGB value to HTML color conversion
- (since 6.6) faster cell merging algorithm

Index

Reference