The decorule LaTeX 2ε package*

A decorative swelled rule from type

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Summary

This package implements a decorative swelled rule using only a symbol from a font installed with all distributions of TeX, so it works independently, without the need to install any additional software or fonts.

This is the packaged version of the macro which was originally published in the 'Typographers' Inn' column in TUGboat (Flynn, 2010).

*This document corresponds to decorule *v.* 0.9p, dated 2024/01/04.

Contents

Typographic representation

In this document, the following information items are shown in this way:

Item	Description
`\command`	name of a LaTeX 'command' (TeX macro or control sequence)
`filename`	name of a file
package	name of a LaTeX package
productname	a product name
`<tag/>`	a tag name in a markup language (eg XML)

Latest changes

v.0.9 (2024-01-04)

ClassPack 1.26 compatibility

- Tested with *ClassPack* 1.26;
- Updated to revert to XeLaTeX for the documentation and processing.

v.0.8 (2023-04-06)

Post ClassPack bugfix release

- Updated to use *ClassPack* 1.21;
- Updated (as a consequence) to use LuaLaTeX for the documentation and processing.

v.0.7 (2020-04-01)

Regression release

- Updated to use *ClassPack* 1.19;
- Switched all `@conformance` attributes on revision dates to `@YYYY-MM-DD`;
- The jump in versions is because the previously submitted version was misnumbered as 0.6 when it should have been 0.06. Thanks to Erik Braun at CTAN for spotting this.

v.0.34 (2020-04-01)

Regression release

- Recreated package with latest version (1.18) of *ClassPack*;
- Fixed bug in using the angle counter that was preventing XeLaTeX generating output.

See p. 19 for earlier changes.

1 Swelled rules

Swelled rules were a popular device in 19th century typesetting, and were usually done as special sorts from a typefounder, or in some cases fabricated from combinations of decorative brass rule cut to calculated lengths.

In digital systems, they can be implemented as images or as glyphs in fonts, but are not usually extensible except by distortion. This example is constructed programmatically so that it could be adapted to the width it is required for (that feature is not implemented in this version and is left as an exercise to the user).

1.1 Other work

As discussed in the original article (Flynn, 2010) there is an swrule package by Tobias Dussa (Dussa, 2001) which builds a geometric lozenge from very fine lines, and there is a paper by Steve Peter (Peter, 2005) which describes a more extensible method using METAPOST for ConTEXt.

1.2 This solution

However, it is also possible to produce one using just a character from a font, combined with some looping in a macro with careful positioning and kerning. This example was constructed from the swung dash (`\sim`) character in math mode, rotated and scaled to fit in an ascending and then descending series.

The package is available on CTAN in http://ctan.org/pkg/decorule, and the development files will be available at http://latex.silmaril.ie/packages when the relevant classpack toolkit is released. Suggestions for improving and extending this package are welcome.

References

Dussa, T. (2001). `swrule.sty`. Retrieved March 20, 2010, from http://mirror.ctan.org/macros/generic/misc/swrule.sty

Flynn, P. (2010). Typographers' Inn: Where have all the flowers gone? *TUGboat*, *31*(1), 21–22.

Peter, S. (2005). Swelled rules and METAPOST. *TUGboat*, *26*(3), 193–195.

Code for the

2 Implementation

The package consists of a single main macro `\decorule`, which cycles through sizes of the symbol from minimum to maximum, rotating and scaling according to values preset here; and then from the maximum back down to the minimum.

2.1 Auto-initialisation

This section is added automatically by *ClassPack* as a preamble to all classes and style packages. For details see the ltxdoc package documentation.

```
\NeedsTeXFormat{LaTeX2e}[2009/09/24]
\ProvidesPackage{decorule}[2024/01/04 v0.9
  A decorative swelled rule from type]
```

2.2 Packages required

Packages required for operation:

noto Sets the Google NoTo typeface as the default.

```
\RequirePackage{noto}%
```

fancyhdr Provide for running headers and footers.

```
\RequirePackage{fancyhdr}%
```

ltxcmds Some LaTeX kernel commands for general use, but in the case of *ClassPack*, particularly `\ltx@ifpackageloaded`.

```
\RequirePackage{ltxcmds}%
```

Define the ltx@ifpackageloaded command.

```
\ifdefined\IfPackageLoaded\relax
  \else\newcommand{\IfPackageLoaded}[3]{%
    \ltx@ifpackageloaded{#1}{#2}{#3}}\fi
```

parskip Creates paragraphs separated by white-space with no indentation.

```
\RequirePackage{parskip}%
```

fix-cm Allow infinitely-variable font scaling. This is still needed even for XeLaTeX and LuaLaTeX but may one day be superseded by the anysizefont package;

```
\RequirePackage{fix-cm}%
```

graphicx Provide for graphics (PNG, JPG, or PDF format (only) for pdflatex; EPS format (only) for standard LaTeX); and for reflection and rotation features.

```
\RequirePackage{graphicx}%
```

2.3 Preliminary declarations

DCR@min Define a counter and a minimum point size to start and end with. This value is an integer, hence a counter is used.

```
\newcounter{DCR@min}
\setcounter{DCR@min}{1}
```

DCR@max Do the same for the maximum point size that the rule will get to in the middle.

```
\newcounter{DCR@max}
\setcounter{DCR@max}{20}
```

DCR@step Set the step size or the increments of the glyph in whole points.

```
\newcounter{DCR@step}
\setcounter{DCR@step}{1}
```

DCR@rotate Specify the amount in (whole) degrees by which we will need to rotate the symbol to make each glyph mesh with the previous one.

```
\newcounter{DCR@rotate}
\setcounter{DCR@rotate}{45}
```

DCR@size Define a counter to hold the current (calculated) size as we loop through the sizes.

```
\newcounter{DCR@size}
```

DCR@raise Define a length to hold the amount calculated at each step to raise/lower each glyph by (because we rotate them as we go).

```
\newlength{\DCR@raise}
```

DCR@skip Define another length to hold the amount calculated to backspace between successive glyphs to make sure they touch.

```
\newlength{\DCR@skip}
```

\DCR@symbol Lastly, define the font character to use as the glyph. For the swelled rule we use the swung dash.

```
\newcommand{\DCR@symbol}{\ensuremath{\sim}}
```

2.4 The main macro

\decorule Now we can define the macro that does the actual work.

```
\newcommand{\decorule}{%
```

Start by setting the initial size to the minimum size declared above:

```
  \begingroup\fontencoding{OT1}\fontfamily{cmr}\selectfont%
  \setcounter{DCR@size}{\c@DCR@min}%
```

Loop through the steps up to, but not including, the maximum size (this loop ends on line 28):

```
  \loop
```

We want to raise each glyph above the baseline by half the point size that we will use, so set the amount to the current size and then divide by two:

```
    \setlength{\DCR@raise}{\c@DCR@size pt}%
    \divide\DCR@raise by2
```

Raise, rotate, and (in this case of \sim) reflect the glyph in a \hbox of its own point size, using \hss as infinitely-flexible space to prevent TEX squawking if the glyph is slightly oversized:

```
    \raisebox{-\DCR@raise}{\fontsize{\c@DCR@size}{0}\selectfont
      \rotatebox{\the\c@DCR@rotate}{%
        \reflectbox{\hbox to\c@DCR@size pt{\hss\DCR@symbol\hss}}}}%
```

Calculate the amount to backspace as ⅔ of the current size:

```
    \setlength{\DCR@skip}{\c@DCR@size pt}%
    \divide\DCR@skip by3
    \multiply\DCR@skip by2
    \kern-\DCR@skip
```

Increment the counter and repeat:

```
    \addtocounter{DCR@size}{\c@DCR@step}%
    \ifnum\c@DCR@size<\c@DCR@max
  \repeat
```

Now do the same for the sole occurrence of the maximum size: this marks the mid-point of the rule:

```
  \setlength{\DCR@raise}{\c@DCR@max pt}%
  \divide\DCR@raise by2
  \raisebox{-\DCR@raise}{%
    \fontsize{\c@DCR@max}{0}\selectfont
    \rotatebox{\the\c@DCR@rotate}{\reflectbox{\hbox
        to\c@DCR@max pt{\hss\DCR@symbol\hss}}}}%
```

Start back down following the exact same pattern in reverse, using the current size (one step less than the maximum just used). The value has been left undisturbed from the last loop of the outward journey. This time, however, do the kerning *before* the glyph.

```
  \loop
    \setlength{\DCR@skip}{\c@DCR@size pt}%
    \divide\DCR@skip by3
    \multiply\DCR@skip by2
    \kern-\DCR@skip
    \setlength{\DCR@raise}{\c@DCR@size pt}%
    \divide\DCR@raise by2
    \raisebox{-\DCR@raise}{%
    \fontsize{\c@DCR@size}{0}\selectfont
    \rotatebox{\the\c@DCR@rotate}{\reflectbox{\hbox
        to\c@DCR@size pt{\hss\DCR@symbol\hss}}}%
    \addtocounter{DCR@size}{-\c@DCR@step}%
    \ifnum\c@DCR@size>\c@DCR@min
  \repeat
```

Finally, do the minimum size:

```
  \setlength{\DCR@skip}{\c@DCR@min pt}%
  \divide\DCR@skip by3
  \multiply\DCR@skip by2
  \kern-\DCR@skip
  \setlength{\DCR@raise}{\c@DCR@min pt}%
  \divide\DCR@raise by2
  \raisebox{-\DCR@raise}{%
  \fontsize{\c@DCR@min}{0}\selectfont
  \rotatebox{\the\c@DCR@rotate}{\reflectbox{\hbox
        to\c@DCR@min pt{\hss\DCR@symbol\hss}}}%
  \endgroup}
```

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```
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%%
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%% of this license or (at your option) any later version.
%% The latest version of this license is in
%%   http://www.latex-project.org/lppl.txt
%% and version 1.3 or later is part of all distributions of LaTeX
%% version 2005/12/01 or later.
%%
%% This work has the LPPL maintenance status `maintained'.
%%
%% The Current Maintainer of this work is M. Y. Name.
%%
```

```
%% This work consists of the files pig.dtx and pig.ins
%% and the derived file pig.sty.
```

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```
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```

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Change History

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