The decorule LaTeX2e package*

A decorative swelled rule

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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 version fixes the bug caused by failing to supply the correct values for DVI drivers for rendering glyph rotation. The result now works in Postscript output but DVI viewers may still display incorrectly.

*This document corresponds to decorule *v.* 0.6, dated 2011/08/02.

Contents

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

\sim

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 asending and then descending series.

This package is available from your nearest CTAN respository in the directory . The original example is available at `http://latex.silmaril.ie/packages/decorule`. All suggestions for improving and extending it are welcome.

1.3 Bugs

Rainer adS and Herbert Schulz kindly pointed out on `comp.text.tex`[1] that it failed when using standard (DVI) LaTeX, although it was correct when using *pdflatex*.

Attempts to render the DVI with (eg) *dvipdf* were failing with a Ghostscript error: `/undefined in \c@sym@rotate`.

\c@sym@rotate

Heiko Overdiek kindly identified the problem with the `\c@sym@rotate` counter, that 'it isn't expandable. The graphics package only uses `edef`, but in the `special`, the explicit number is needed, because PostScript or GhostScript don't know TEX.'

[1] `<j0sco9$emv$1@news.albasani.net>` and `<herbs-038AC9.15151428072011@news.wowway.com>`

The result now works in Postscript output but DVI viewers may still display incorrectly.

References

Dussa, T. (2001, Oct). swrule.sty. CTAN: TEX Users Group.

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.

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 Preliminary declarations

`\sym@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{sym@min}
\setcounter{sym@min}{1}
```

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

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

`\sym@step` Set the step size or the increments of the glyph in whole points.

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

`\sym@rotate` `\thesym@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. The use of the `\thesym@rotate` form is a bugfix due to Heiko Oberdiek in `news:comp.text.tex` at ⟨`j0sonk$q9v$1@dont-email.me`⟩.

```
\newcounter{sym@rotate}
\renewcommand*{\thesym@rotate}{\the\c@sym@rotate}%
\setcounter{sym@rotate}{45}
```

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

```
\newcounter{sym@size}
```

`\sym@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{\sym@raise}
```

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

```
\newlength{\sym@skip}
```

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

```
\newcommand{\sym@symbol}{$\sim$}
```

2.2 The main macro

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

```
\newcommand{\decorule}{\par\begingroup\centering
```

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

```
\setcounter{sym@size}{\c@sym@min}
```

Go through the steps up to, but not including, the maximum size:

```
\loop
```

Raise each glyph above the baseline by half the point size that we will use:

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

`\sim` `\thesym@rotate` `\c@sym@rotate` Raise, rotate, and (in this case of `\sim`) reflect the glyph in a `hbox` of its own point size, using `hss` to prevent TeX squawking. Heiko Oberdiek also identified the fix of using `\thesym@rotate` instead of `\c@sym@rotate` for the box rotation, here and elsewhere below.

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

Calculate the amount to backspace as $^{2}/_{3}$ of the current size:

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

Increment the counter and repeat:

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

Now do the same for the sole occurrence of the maximum size:

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

Finally, do the minimum size:

```
\setlength{\sym@skip}{\c@sym@min pt}%
```

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

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Change History

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