The \texttt{scsnowman} package v1.3c

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The \LaTeX\ package \texttt{scsnowman} provides a command \texttt{\scsnowman}, which can display many variants of snowmen. This package utilizes \texttt{TikZ} for drawing snowmen.

\begin{center}
\begin{tabular}{ccc}
\includegraphics[width=0.2\textwidth]{snowman1} & \includegraphics[width=0.2\textwidth]{snowman2} & \includegraphics[width=0.2\textwidth]{snowman3} \\
U+2603 & U+26C4 & U+26C7 \\
SNOWMAN & SNOWMAN WITHOUT SNOW & BLACK SNOWMAN
\end{tabular}
\end{center}

The package is maintained on GitHub:

- \url{https://github.com/aminophen/scsnowman}

\begin{center}
\begin{tabular}{ccc}
\includegraphics[width=0.2\textwidth]{snowman4} & \includegraphics[width=0.2\textwidth]{snowman5} & \includegraphics[width=0.2\textwidth]{snowman6} \\
\includegraphics[width=0.2\textwidth]{snowman7} & \includegraphics[width=0.2\textwidth]{snowman8} & \includegraphics[width=0.2\textwidth]{snowman9}
\end{tabular}
\end{center}
## Contents

1  The History of Snowman in Unicode 3  
2  Variation of Snowman among Actual Fonts 3  
3  Introduction to \texttt{scsnowman} Package 5  
4  Command Options 5  
   4.1 Scaling and Adjustment Options 5  
   4.2 Design Options 5  
5  Changing the Default 6  
6  Adding User-defined Snowman Shapes 6  
7  Funny Usages 7  
   7.1 Changing Item Labels and QED Symbols 7  
   7.2 Drawing “Kagami-mochi” 7  
   7.3 Replacing All “8” with Snowmen 8  
1 The History of Snowman in Unicode

In October 1991, the first volume of the Unicode standard was published. Since then, there was a code point assigned to a character “snowman”; U+2603.

\[
\begin{align*}
U+2603 & \text{ SNOWMAN} \\
= & \text{ snowy weather}
\end{align*}
\]

It seems that the shape of its reference glyph in Unicode 1.0.0 was taken from “Ryumin”, which was developed by Morisawa (a famous font vendor in Japan). A few years later, the reference glyph has sometimes been changed to another; however, there had been only one “snowman” in Unicode until 2009.

In October 2009, Unicode 5.2 was published. In this volume, two “snowman” code points were added; U+26C4 and U+26C7.

\[
\begin{align*}
U+26C4 & \text{ SNOWMAN WITHOUT SNOW} \\
= & \text{ light snow} \\
U+26C7 & \text{ BLACK SNOWMAN} \\
= & \text{ heavy snow}
\end{align*}
\]

According to the code chart, the origin of these two characters is ARIB STD-B24 (Data Coding and Transmission Specification for Digital Broadcasting;\(^1\)), which was established by Association of Radio Industries and Business in Japan. Since then, it can be said that the old code point U+2603 has been given an implicit meaning of “SNOWMAN WITH SNOW”. The reference glyphs were also changed at that time.

2 Variation of Snowman among Actual Fonts

Since the shapes of the reference glyphs used in the Unicode code charts are not prescriptive, the actual fonts have a wide variety of glyph designs. However, when it comes to snowmen, the variation between fonts is enormous. This variation is very interesting, however, on the other hand, problematic.

Table 1 shows the variety of “snowman” in actual fonts. The snowman in “IPA Mincho (IPA 明朝)” from Information-technology Promotion Agency is very similar to the one in “Ryumin (リュウミン)” from Morisawa. However, in “MS Mincho (MS 明朝)” from Microsoft, the snowman wears a black hat instead of white one. In “Kozuka Mincho (小塚明朝)” from Adobe Systems Inc., he/she wears a muffler instead of a hat. Moreover, it doesn’t snow in “Hiragino Mincho (ヒラギノ明朝)” from SCREEN Graphic and Precision Solutions Co., Ltd. It is natural that some fonts developed before 2009 have a “snowman without snow” glyph in the code point U+2603, however, it can be a problem when we have to transfer the exact information to others.

\(^1\)http://www.arib.or.jp/tyosakenkyu/kiksku_hoso/hoso_std-b024.html; Abstract in PDF format (both Japanese and English) are available.
Table 1: The variety of “snowman” in actual fonts

<table>
<thead>
<tr>
<th>Font Style</th>
<th>U+2603</th>
<th>U+26C4</th>
<th>U+26C7</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPAex 明朝</td>
<td><img src="IPAex.jpg" alt="Image" /></td>
<td><img src="IPAex.jpg" alt="Image" /></td>
<td><img src="IPAex.jpg" alt="Image" /></td>
</tr>
<tr>
<td>MS 明朝</td>
<td><img src="MS.jpg" alt="Image" /></td>
<td><img src="MS.jpg" alt="Image" /></td>
<td><img src="MS.jpg" alt="Image" /></td>
</tr>
<tr>
<td>小塚明朝 Pr6N Regular</td>
<td><img src="Kotobuki.jpg" alt="Image" /></td>
<td><img src="Kotobuki.jpg" alt="Image" /></td>
<td><img src="Kotobuki.jpg" alt="Image" /></td>
</tr>
<tr>
<td>ヒラギノ明朝 ProN W3</td>
<td><img src="Hiragino.jpg" alt="Image" /></td>
<td><img src="Hiragino.jpg" alt="Image" /></td>
<td><img src="Hiragino.jpg" alt="Image" /></td>
</tr>
<tr>
<td>VL ゴシック</td>
<td><img src="VL.jpg" alt="Image" /></td>
<td><img src="VL.jpg" alt="Image" /></td>
<td><img src="VL.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>
3 Introduction to \texttt{scsnowman} Package

The \LaTeX\ package \texttt{scsnowman} provides a command \texttt{\scsnowman}, which can display many variants of snowmen. This package depends on TikZ package for drawing snowman images.

To use this package, load it in preamble:

\begin{verbatim}
\usepackage{scsnowman}
\end{verbatim}

In the main document, use \texttt{\scsnowman} command to print a snowman: \rotatebox{90}{\textbullet}. By default, the snowman is “plain” style, without any decoration such as snow, a hat or a muffler.

4 Command Options

You can customize the style of a snowman using the optional argument. The syntax is

\begin{verbatim}
\scsnowman[(key-value list)]
\end{verbatim}

4.1 Scaling and Adjustment Options

The following keys are available:

\texttt{scale, adjustbaseline}

The key \texttt{scale} takes a scale factor. The origin of scaling is set at the lower left corner of the bounding box. For example, \texttt{\scsnowman}, \texttt{\scsnowman[scale=3]} and \texttt{\scsnowman[scale=5]} give:

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{snowman-scale}
\caption{Scaling examples.}
\end{figure}

When the key \texttt{adjustbaseline} is specified (or, \texttt{adjustbaseline=true}), the base line of the in-line snowman will be adjusted to that of the surrounding texts. This will be helpful when a snowman appears to be “floating in the air.”

\begin{verbatim}
Text, \scsnowman[scale=1]
\scsnowman[scale=4]
\scsnowman[scale=7], T.\par
T.\par
Text, \scsnowman[adjustbaseline,scale=1]
\scsnowman[adjustbaseline,scale=4]
\scsnowman[adjustbaseline,scale=7], T.
Text, \scsnowman[adjustbaseline,scale=1]
\scsnowman[adjustbaseline,scale=4]
\scsnowman[adjustbaseline,scale=7], T.
\end{verbatim}

4.2 Design Options

Following keys take a value which specifies color. When the \texttt{value} is omitted, it reacts to the surrounding text color:

\begin{verbatim}
\scsnowman[\textcolor{color}{value}]
\end{verbatim}

\begin{verbatim}
\scsnowman[\textcolor{color}{value}]
\end{verbatim}

\begin{verbatim}
\scsnowman[\textcolor{color}{value}]
\end{verbatim}
body, eyes, mouth, nose, sweat, arms, hat, muffler, buttons, snow, note, broom

The following keys require one specific value:

shape, mouthshape

The key shape specifies the outline shape of the snowman body. Currently, only shape=normal is officially available, but you can define and use other shapes using \usescsnowmanlibrary command (described later, section 6).

The key mouthshape takes one of the followings: smile, tight or frown. Here are some examples:

\scsnowman[shape=normal, scale=2, body, hat=red, muffler=blue]
\scsnowman[shape=normal, scale=3, hat, snow, arms, buttons, note]
\scsnowman[shape=normal, scale=2, muffler=red, arms, broom=brown]
\scsnowman[shape=normal, scale=2, mouthshape=frown, hat=green]
\color{blue}\scsnowman[shape=normal, scale=2, body, hat=red, muffler=blue]
\scsnowman[shape=normal, scale=2, hat, snow, arms, buttons, note]
\scsnowman[shape=normal, scale=3, muffler=red, arms, broom=brown]
\scsnowman[shape=normal, scale=2, mouthshape=frown, hat=green]}

5 Changing the Default

The package default is the “plain” style snowman. This default can be changed by using \scsnowmandefault command. The syntax is

\scsnowmandefault{(key-value list)}

The available keys are the same as those in \scsnowman. Here are some examples:

\scsnowmandefault{scale=5, hat=red}
\scsnowman
\scsnowman[body, muffler=blue, arms]
\scsnowman[hat=green, snow, nose=orange]

6 Adding User-defined Snowman Shapes

Any users can define and use custom snowman shape definitions. Here is a description of adding a shape named myfavorite.

1. Prepare a snowman definition file scsnowman-myfavorite.def and put it into $TEXMF tree (e.g. texmf-local/tex/latex/scsnowman/). For the format of snowman definition files, please refer to scsnowman-normal.def.

2. Use \usescsnowmanlibrary command (don’t forget sc!) to load it.

    \usepackage{scsnowman}
    \usescsnowmanlibrary{myfavorite}

3. You can use the shape by \scsnowman[shape=myfavorite] command.

If you have created a fancy snowman, please contact me, so that I can incorporate it into the official release!
7 Funny Usages

7.1 Changing Item Labels and QED Symbols

For those who want more snowmen in the documents, currently `scsnowman` provides the following additional commands:

\makeitemsnowman:
Change item labels in \texttt{itemize} environment to snowmen ❂ ❂ ❂ ❂. The command \texttt{\makeitemother} restores the default, usually • – •.

\makeqedsnowman:
Change the QED symbol in \texttt{proof} environment to a snowman ❂. The package \texttt{amsthm} is required. The command \texttt{\makeqedo ther} restores the default, usually □.

These commands can be used wherever you want, and are effective within the current group.

Here are some examples:

\begin{itemize}
\item Foo X.
\item Bar A.
\item Bar B.
\item Bar C.
\end{itemize}

\begin{itemize}
\item Baz P.
\item Baz Q.
\end{itemize}

\begin{theorem}
Given two line segments whose lengths are $a$ and $b$ respectively, there is a real number $r$ such that $b=ra$.
\end{theorem}

\begin{proof}
To prove it by contradiction try and assume that the statement is false, proceed from there and at some point you will arrive to a contradiction.
\end{proof}

The names of these commands are, of course, named after the \LaTeX \texttt{\makeatletter} and \texttt{\makeatother};-)

7.2 Drawing “Kagami-mochi”

Using `scsnowman` package, you can also draw “kagami-mochi” (mirror rice cake). It is a traditional Japanese New Year decoration, which usually consists of two round “mochi” (rice cakes), the smaller placed atop the larger, and a “daidai” (a Japanese bitter orange) with an attached leaf on top.
Following *keys* are implemented for this usage:\(^2\)

mikan, leaf

The *key leaf* is effective only when *mikan* is specified. Here is an example:

\scsnowmandefault{scale=5.5}
\scsnowman[eyes=false,mouth=false,mikan=orange,leaf=green]

### 7.3 Replacing All “8” with Snowmen

You can replace all “8” inside an arabic number expression with snowmen \(8\) by using \(\backslash\text{csnowman numeral}\). Here is an example:

\scsnowmandefault{adjustbaseline}\scsnowman numeral{18882} \(1\ \text{산} \ 2\)
\scsnowman numeral[muffler=blue,scale=1.5]{4283859} \(42 \text{ 산} \ 3 \text{ 산} \ 59\)

You can also replace all “8” inside the page numbering with snowmen \(8\) by adding \(\backslash\text{pagenumbering}{\text{enumsnowman}}\). This documentation itself is an example!

\(^2\)Strictly speaking, the orange on top of rice cakes should be “daidai”; however, a “mikan” is often substituted for the original “daidai".
Version History

This is the summary of changes. For more detail, see GitHub repository.

- **Version 0.1** 2015-12-13 First public version on GitHub
- **Version 0.8** 2016-08-08 Second public version on GitHub: new variants buttons, mouthshape, sweat are added
- **Version 1.0** 2016-12-22 First CTAN release
- **Version 1.1** 2017-01-22 Add a new key adjustbaseline Update documentation
- **Version 1.2** 2017-08-08 Default color reacts to surrounding text color Support vertical writing on (u)pTeX and LuaTeX-ja Add a new key shape Add a new command \usescsnowmanlibrary
- **Version 1.2a** 2017-11-25 Fix a bug in scaling with adjustbaseline
- **Version 1.2b** 2018-01-05 Add new keys mikan, leaf for drawing ‘kagami-mochi’ Stopped loading amsthm by default
- **Version 1.2c** 2018-01-15 Add a new key broom
- **Version 1.2d** 2018-06-07 Add new keys nose, note Add a new command \scsnowmunnernumeral
- **Version 1.2e** 2019-08-12 Fix a bug of possible infinite loop
- **Version 1.3a** 2020-10-10 Update for new \LaTeX
- **Version 1.3b** 2023-02-14 Fix a bug of upTeX engine detection
- **Version 1.3c** 2023-02-23 Another bug fix of engine detection

References

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[2] ヒラギノの雪だるまは、なぜ寂しそうなのか — Mac OS X の文字コード問題に関するメモ
[3] いろいろなゆきだるま — TeX Alchemist Online
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[5] Unicode の例の雪だるまは多分アレ — マクロツイーター
[6] TeXでゆきだるまを“もっともっと”たくさん — Acetaminophen’s diary
[7] 夏といえば、やっぱり「ゆきだるま」! — Acetaminophen’s diary
[8] How do I redefine the QED symbol to be a Unicode character? — TeX – \LaTeX Stack Exchange