The \texttt{verbatimbox} Package

Routines for placing stylized verbatim text into boxes, useful in places where the verbatim environment is inaccessible. Secondarily, for adding vertical buffer around an object.

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1 Description and Commands

The \texttt{verbatimbox} package allows verbatim material to be placed into \LaTeX\ boxes, for later recall. This function is useful in several situations, primarily in places where the verbatim environment is otherwise inaccessible (for example, in the midst of a tabular environment). It is also useful if a given verbatim text needs to be recalled multiple times within a document.

One very nice feature of this package is the optional argument to both environments and macros that allows custom stylization of the verbatim text (fontshapes, sizes, numbering lines, \textit{etc.}) through the use of pre-commands. For those who prefer this form of optional-argument customization, the environments and macros are also provided in a “no-box” form that is output directly, rather than being saved in a box. The no-box forms can be used when the verbatim has to span across page breaks.

While there is application for its use within the \texttt{verbatimbox} application, this package also offers an independent command for conveniently providing vertical buffer space above and below an object.

The environments and macros provided by this package are given as follows:

\begin{verbatimbox}\{pre-commands\}\end{verbatimbox}
\begin{myverbatimbox}\{pre-commands\}\{token\}\end{myverbatimbox}
\verbfilebox\{pre-commands\}\{filename\}
\theverbatimbox[t]
\boxtopsep = length
\boxbottomsep = length
\addvbuffer[length [below length]]\{object\}
\begin{verbatimnobox}\{pre-commands\}\end{verbatimnobox}
\verbfilenobox\{pre-commands\}\{filename\}

\texttt{VerbboxLineNo} In addition, there is a counter, \texttt{VerbboxLineNo}, which contains the current verbatim line number being processed. It’s use as part of the optional pre-
commands to \verbbox, myverbbox, or \verbfilebox (in the form of \[\arabic{VerbboxLineNo}:\]
will cause the lines of the environment to be numbered.

1.1 The \verbbox Environment

The \verbbox environment places the content of the environment into a verbatim
box. The box is not printed when the environment is closed. However, the box
can be later recalled (even in a verbatim-restricted environment) by way of the
command \verbbox. Being placed into a box, it is important to remember
that a \LaTeX box cannot span across page boundaries.

The width of the box into which the contents of the environment are placed is
the width of the longest line in your environment, rather than the width of the
page. This feature can be useful if the box is being recalled inline with other
text, as in this example, shown immediately to the left.

The environment has one optional argument, which can contain commands that
will be executed before each line of verbatim text is output. Thus, they can
include font size, series, shape, or family changes affecting the appearance of
the verbatim text in the box. They can also include printed matter, like a bullet

\begin{verbbox}[	extbullet\hspace{1ex}]
first line
second line
third line
\end{verbbox}
\verbbox
• first line
• second line
• third line

or, as mentioned earlier, the lines can be numbered:

\begin{verbbox}[	extarabic{VerbboxLineNo}:\hspace{1ex}]
first line
second line
third line
\end{verbbox}
\verbbox
1: first line
2: second line
3: third line
The customization can make use of the `VerbboxLineNo` counter in ways that make it line specific. Note that the optional argument must be contained on a single line.

\newcommand*{\ifline}[3]{% 
  \ifthenelse{\value{VerbboxLineNo} = #1}{#2}{#3}}
\newcommand*{\highlight}{% 
  \color{red}\rmfamily\itshape\bfseries\large\bullet~}
\newcommand{\nohighlight}{\arabic{VerbboxLineNo}:\hspace{1ex}}
\begin{verbbox}{\ifline{2}{\highlight}{\nohighlight}}
  Line 1
  Line 2
  Line 3
\end{verbbox}
\theverbbox

1: Line 1
• \textbf{Line 2}
3: Line 3

### 1.2 The myverbbox Environment

With the `verbbox` environment, one is limited to one verbatimbox at a time, since each new environment invocation overwrites the prior box. A new environment, `myverbbox`, has therefore been introduced with version 3.0 of the package. It is very similar to `verbbox`, except that it is not recalled with the use of `\theverbbox`. In addition to the optional argument which functions like that in `verbbox`, `myverbbox` must be supplied a mandatory argument which is the command name that will recall the box contents.

This environment was created for the situation when there is a need to recall more than one verbatimbox in a given restricted environment. Here is an example where two verbatimboxes must be inserted into the tabular environment (where verbatim is prohibited):

\begin{myverbbox}{$\vtheta$}$\theta$\end{myverbbox}
\begin{myverbbox}{$\valpha$}$\alpha$\end{myverbbox}
\begin{tabular}{|c|c|}
  \hline
  $\valpha$ & $\alpha$ \\ hline
  $\vtheta$ & $\theta$ \\ hline
\end{tabular}

\begin{verbatim}
\alpha \alpha
\theta \theta
\end{verbatim}
In this example the the command \texttt{\valpha} will recall a verbatimbox with the verbatim content \texttt{\alpha}. Likewise for \texttt{\vtheta}.

1.3 The \verbfilebox Command

The \verbfilebox command is comparable to the aforementioned environments, except that it is a command which takes the contents of a file specified in the mandatory argument and places it in a verbatimbox. Like \verbbox, the boxed content can be recalled with an invocation of \texttt{\theverbbox}. The optional argument contains pre-commands and functions in the same manner as described for the \verbbox environment.

1.4 The \theverbbox Command

As already mentioned in the prior sections, the \texttt{\theverbbox} command is issued to recall the contents of a box created by either the \verbbox environment or the \verbfilebox command. This command can be issued in places where the verbatim environment is otherwise inaccessible, such as in the tabular environment or inside footnotes.

There is a [t] option to this command, which preconditions \texttt{\theverbbox} for environments where it will be framed, by adding 3pt (by default) of space above the boxed content, since the top of the box is otherwise clipped to the verbatim contents. So in the following example, the left invocation of \texttt{\theverbbox} is done without the [t] option, whereas for the right invocation, it is done with the [t] option. As you can see, the framing on the right-hand box is more symmetric.

\begin{verbatim}
1: first line
2: second line
3: third line
\end{verbatim}

\begin{verbatim}
1: first line
2: second line
3: third line
\end{verbatim}

If one wishes a different vertical-buffer preconditioning of \texttt{\theverbbox}, one can either reset the lengths \texttt{\boxtopsep} and \texttt{\boxbottomsep} or else one can use the \texttt{\addvbuffer} command described below.

1.5 The \addvbuffer Command

The prior section already showed how when a verbatimbox is framed, it may need some buffer space added above the box which is otherwise (by design) clipped to the verbatim content. While the [t] option will work for \texttt{\theverbbox},
that option does not exist for any of the boxes created through the \myverbbox environment. Furthermore, the user may sometimes wish to add an arbitrary vertical buffer above and below an object, without changing the underlying \boxtopsep and \boxbottomsep lengths associated with the [t] option of \theverbbox.

The \addvbuffer command is made to do this, and is useful in many situations inside and outside of verbatimbox manipulations. The mandatory argument to the command is the object over and under which to place vertical buffer. As of version 3.0 of this package, the command comes with an optional argument to specify how much buffer to use. If the optional argument is omitted, the buffer will be the amounts specified by the \boxtopsep and \boxbottomsep lengths.

The optional argument can take two forms. If the optional argument comprises a single length, that length is symmetrically added above and below the object. So, for example, \fbox{\addvbuffer[5pt]{\theverbbox}} will produce

1: first line
2: second line
3: third line

On the other hand, the optional argument may comprise two lengths, in which case the first length is added above the object and the second is added below the object. Thus, \fbox{\addvbuffer[15pt 5pt]{\theverbbox}} will produce

1: first line
2: second line
3: third line

But \addvbuffer need not only be used for \theverbbox. It can be used on other objects, for example a \parbox

\begin{parbox}{5em}
This is a test of the emergency broadcast system
\end{parbox}

or even on just plain text \fbox{\addvbuffer[15pt 5pt]{A test}}:

A test
It can even be used to remove vertical space from an object's size, by adding negative buffer \addvbuffer[-5pt -5pt]{A test}:

\fbox{A test}

This ability to work on a variety of objects makes \addvbuffer a powerful command in many applications.

**ATTENTION.** This paragraph represents a change as of V3.11, and can break backward compatibility. Likewise, if two length variables are to be used in the optional argument, the two lengths must be separately braced, with a space in between:

\fbox{\addvbuffer[{$\baselineskip$} {.5$\baselineskip$}]{A test}}

\fbox{A test}

One may no longer use a “\ ” hard space to separate the two arguments.

### 1.6 The “nobox” Alternatives

Alternatives are provided for the \verbbox environment and the \verbfilebox macro, which output the content directly, rather than place it into a box. These alternatives are named \verbnoobox and \verbfilenobox. Like their boxed counterparts, these alternatives make use of the convenient optional pre-commands that allow for custom stylization of the verbatim content.

Because they are not placed into a box, but instead output directly, their content cannot be recalled at a later time in the document. While the boxed versions have a particular use in environments where verbatim is inaccessible, the no-boxed alternatives may be used when the content must span a page break.

### 2 Quirks

The use of a single optional argument for the \verbbox environment has caused problems in the past, if the first item in the environment was a command, rather than text. This problem has been resolved as of version 3.0 of the package (for backward compatibility, we have kept the earlier incarnation of \verbbox, now renamed as \origverbbox). However, a few minor quirks remain even with the new version (which, incidentally, can be avoided by using the \myverbbox envi-
Thus, frames shown in these examples are for illustrative purposes only.

The primary quirk of `verbbox` is that its optional argument does not take effect until the second line (on the line following the environment invocation), so that

\begin{verbbox}\LARGE first line
second line\end{verbbox}
\fbox{\theverbbox}

would look like:

\begin{center}
\begin{tabular}{|l|}
\hline
first line
\hline
second line
\hline
\end{tabular}
\end{center}

The solution, in the presence of an optional argument, is to begin the first line of the environment contents on the following line. Thus,

\begin{verbbox}\LARGE
first line
second line\end{verbbox}
\fbox{\theverbbox}

will yield the expected result:

\begin{center}
\begin{tabular}{|l|}
\hline
first line
\hline
second line
\hline
\end{tabular}
\end{center}

No such requirement is necessary if there are no optional arguments. So, for example, \begin{verbbox}Hello World\end{verbbox} will produce, upon issue of \theverbbox, the box “Hello World.” As with all verbatim environments, the \end{verbbox} must be followed by a linebreak, or the subsequent text on that line will be lost.

The `myverbbox` environment does not suffer the above quirk, so that \begin{myverbbox}\scriptsize \{mybox\}Hello World\end{myverbbox} gives, upon issue of \mybox, the expected result: Hello World.

The optional argument of `verbbox` may contain both printing or nonprinting material. The printing material will appear (as \LaTeX, not as `verbatim`) at the beginning of every line of the `verbbox`. However, it is recommended to place nonprinting material at the lead of the optional argument, or the box width.

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1 In all these examples, the `verbbox` material is explicitly placed in an \fbox, to expressively show the limits of the boxed material. Throughout this section, \fboxsep has been set to 0pt.
may be improperly set, as in this following example:

\begin{verbbox}{\rmfamily\textsc{Debug}:\footnotesize}
 first line
 second line
\end{verbbox}
\fbox{\theverbbox}

Note how the box does not extend to the end of the text line. When placing printing commands before non-printing commands that change the fontsize, the reverse is also possible, where the box is set too large for the actual text.

The \texttt{myverbbox} environment behaves identically in this regard. Below we show the prior example, this time created in the \texttt{myverbbox} environment, except that the non-printing optional material has been placed before the printing optional material, so that the box size is correctly interpreted:

\begin{myverbbox}{\rmfamily\textsc{Debug}:first line\fbox{\theverbbox}}
 Debug: first line
 Debug: second line
\end{myverbbox}

There are differences, however, in how \texttt{verbbox} and \texttt{myverbbox} process the optional argument, which relate to overcoming the problems associated with a single optional argument for the \texttt{verbbox} environment. In particular, while the \texttt{myverbbox} optional argument should behave as one would otherwise expect, the optional argument of \texttt{verbbox} will ignore spaces (which can be overcome with \texttt{\hspace{}}) and will choke on the dollar symbol (\$) as a way to enter and exit math mode (which can be overcome by using the \texttt{\( \)} syntax instead). Thus, an optional argument like

\[
\arabic{VerbboxLineNo}\cdot\]

which works fine for \texttt{myverbbox}, would need to appear as

\[
\arabic{VerbboxLineNo}\hspace{1ex}\]

in the \texttt{verbbox} environment. In that case, it would number the lines of the environment in the following manner:

1. first line
2. second line
3. third line

There is also a quirk with the macro \texttt{addvbuffer}. If the \texttt{addvbuffer} macro adds negative space below an argument, the argument is vertically shifted downward by the same amount. For example, compare the following constructions, \texttt{\fbox{gb}} and \texttt{\fbox{addvbuffer[-3pt]{gb}}}: \includegraphics[width=0.3\textwidth]{example.png}. In the latter case, the box is bottom-trimmed, but the result is shifted downward. This adverse outcome can generally be overcome with a countering \texttt{\raisebox}. However, if the \texttt{\raisebox} would otherwise place the new box above the baseline,
the effect of the \texttt{addvbuffer} on the bottom of the box is spoiled, as in the
comparison given by the constructions \texttt{\fbox{\addvbuffer[-3pt]{X}}} versus
\texttt{\fbox{\raisebox{3pt}{\addvbuffer[-3pt]{X}}}} which produces this result:
\begin{verbatim}
X
\end{verbatim}
Note how 3pt are not trimmed from the bottom of the second box. For
this reason, the \texttt{raisebox} remedy has not been incorporated into the definition
of \texttt{addvbuffer}; instead, the quirk has been allowed to stand.

3 Acknowledgements

I would like to thank Dr. David Carlisle for his great assistance in helping me to
understand the nuances of optional arguments used in verbatim environments,
allowing me to correct a longstanding bug in the \texttt{verbbox} environment:
\begin{verbatim}
http://tex.stackexchange.com/questions/109030/
optional-arguments-in-verbatim-environments
\end{verbatim}
I would also like to acknowledge the use of three lines of code created by Prof.
Enrico Gregorio, to strip the leading backslash from a \LaTeX\ command name
\begin{verbatim}
http://tex.stackexchange.com/questions/42318/
removing-a-backslash-from-a-character-sequence
\end{verbatim}

4 Code Listing

\begin{verbatim}
\def\verbatimboxVersionNumber{v3.13 }
\ProvidesPackage{verbatimbox}
  [2014/03/12 \verbatimboxVersionNumber]
Routines for placing verbatim text into boxes, useful in places where
the verbatim environment is inaccessible. Secondarily, for adding
vertical buffer around an object.]
\%  \% This work may be distributed and/or modified under the
\% conditions of the \LaTeX\ Project Public License, either version 1.3
\% 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 1.3c or later is part of all distributions of \LaTeX\n\% version 2005/12/01 or later.
\%
\% This work has the LPPL maintenance status ‘maintained’.
\%
\% The Current Maintainer of this work is Steven B. Segletes.
\%
\% verbatimbox.sty is based on boxedverbatim environment found
\end{verbatim}
An enabling routine, \addvbuffer[]{} shares some functional similarities to \raisebox, but it is not the same.

2.01 -Added LPPL License info to package
3.0 -Added myverbbox environment
   -Corrected problem when no optional arguments are passed to verbbox environment
   -Added optional arguments to \addvbuffer
   -Fixed \verbfilebox so that it restored \verbatim@processline
   -Produced real documentation
3.01 -renamed \macro@name so as not to conflict with (I think) ltxdoc package
3.1 -Corrected default argument to \addvbuffer so that it wouldn’t break. Also, gave better guidance in documentation to use of optional argument to \addvbuffer
   -Added verbnobox environment and \verbfilenobox macro
   -Improved documentation showing line-specific optional arguments
3.11 -Eliminated the use of the stringstrings package, which resets the definition of \|
3.12 -Corrected bug introduced in V3.11, which occured with [t]
   -When using two lengths in \addvbuffer optional argument,
   -they MUST be individually in {}, rather than "-n or \ " between
3.13 -Corrected residual bug from V3.11, when \addvbuffer called without an optional argument,
\NeedsTeXFormat{LaTeX2e}
\ifundefined{verbatim@processline}{\RequirePackage{verbatim}}{}
\usepackage{readarray}

% Following 3 lines thanks to Prof. Enrico Gregorio, from:
% http://tex.stackexchange.com/questions/42318/
% removing-a-backslash-from-a-character-sequence
\begingroup\lccode\'|='\|
\lowercase{\endgroup}\def\removebs#1{\if#1\|\else#1\fi}
\newcommand{\@macro@name}[1]{\expandafter\removebs\string#1}

% The verbbox environment is based on the boxedverbatim environment found in moreverb.sty
% The optional argument allows the user to modify properties of the text such as fontsize
% \newenvironment{origverbbox}[1][]{%
  \def\verbatim@processline{%\setbox0\hbox{\the\verbatim@line}%\hsize=\wd0 \the\verbatim@line\par}%\@minipagetruer\@tempswatrue
  @setbox0=\vbox\bgroup #1 \verbatim
%
}{\verbatim\unskip\setbox0=\lastbox \egroup \global\sbox{\savedverbbox}{\box0} }
%
% David Carlisle provided the \verbbox@inner approach to avoid
% problem when no optional argument is provided to verbbox environment:
% http://tex.stackexchange.com/questions/109030/optional-arguments-in
% -verbatim-environments
\newcommand\verbbox@inner[1][]{{\n\fss@catcodes\scantokens{\gdef\@tmp{#1}}}}
\def\@tmp{}
\newenvironment{verbbox}{%
  \setcounter{VerbboxLineNo}{-1}%
  \let\my@par\par%
  \def\verbatim@processline{%\addtocounter{VerbboxLineNo}{1}%\@tmp\setbox0\hbox{\@tmp\the\verbatim@line}%\hsize=\wd0 \the\verbatim@line\my@par}%
  @minipagetruer\@tempswatrue
  @setbox0=\vbox\bgroup \verbatim\verbbox@inner
%
}{\verbatim\unskip\setbox0=\lastbox \egroup \global\sbox{\savedverbbox}{\box0} \global\def\@tmp{}}}
The myverbbox environment is altered from verbbox environment
The optional argument allows the user to modify properties of
the text such as fontsize
The mandatory argument is a command which is formed so as to
regurgitate the boxed content created within the environment

\newenvironment{myverbbox}{2}{%}
\setcounter{VerbboxLineNo}{0}%
\def\verbatim@processline{%
% THE FIRST #1 ACCOUNTS FOR NON-PRINTING COMMANDS; THE SECOND #1 IS FOR
% PRINTED OPTIONAL MATERIAL
{\addtocounter{VerbboxLineNo}{1}%
 #1\setbox0=\hbox{#1\the\verbatim@line}%
 \hsize=\wd0 \the\verbatim@line\par}}%
@minipagetrue%
@tempswatrue%
\global\edef\sv@name{\@macro@name{#2}}%
@ifundefined{\sv@name content}{%}
\expandafter\newsavebox\expandafter{\csname\sv@name content\endcsname}%
\expandafter\global\expandafter\edef\csname\sv@name\endcsname{\usebox{\csname\sv@name content\endcsname}}%
\setbox0=\vbox{\begin{verbatim}}%
\expandafter{\def\verbatim@processline{\sv@verbatim@processline}}%
\expandafter{\def\verbatim@processline{\sv@verbatim@processline}}%
\end{verbatim}%
\unskip\setbox0=\lastbox %
\verbatim%
\global\sbox{\csname\sv@name content\endcsname}{\box0}%
}%
% The verbfilebox command is like the verbbox environment, but takes
% a file as input, rather than text typed into an environment.
% The optional argument allows the user to modify properties of the text
% such as fontsize
% Example: \verbfilebox[\scriptsize]{myfile}

\let\sv@verbatim@processline\verbatim@processline
\verbfilebox[\scriptsize]{myfile}
\verbatim@processline
% The following two "nobox" commands are basically versions of
% \verbatiminput and \verbatim that have been adapted to take the
% optional argument style of this package. No boxes are created,
% but breaking across page boundaries is not a problem here, as
% it would be with a box.

\newcommand\verbfilenobox[2][{}]{%
  \setcounter{VerbboxLineNo}{0}%
  \def\verbatim@processline{%
    #1\setbox0=\hbox{#1\the\verbatim@line}%
    \hsize=\wd0 \the\verbatim@line\par}}%
\verbatiminput{#2}
\let\verbatim@processline\sv@verbatim@processline%
}

\newenvironment{verbnobox}{%
  \setcounter{VerbboxLineNo}{-1}%
  % FOR SOME REASON, USING \my@par INSTEAD OF \par PREVENTS EXTRA SPACE
  % ABOVE verbbox WHEN USING OPTIONAL ARGUMENTS
  \let\my@par\par%
  \def\verbatim@processline{%
    \@tmp\setbox0=\hbox{\@tmp\the\verbatim@line}%
    \hsize=\wd0 \the\verbatim@line\my@par}}%
  \verbatim\verbbox@inner%
}{%
  \endverbatim%
  \global\def\@tmp{}%}

%END