Documentation for colortab.tex/colortab.sty: Shading and coloring TEX tables

Timothy Van Zandt
tvz@Princeton.EDU

Version 0.9
January 11, 1993

`colortab.tex/colortab.sty` contains macros that let you use your color commands for shading and coloring cells in tables and other alignment environments. It is compatible with most TEX macro packages.

Contents

1 Introduction

Adding color to tables is fraught with difficulties, but as the examples in this file indicate, it can be done. In any case, consider this an advanced topic, and be aware that the commands in `colortab.tex` are not robust.

This is meant to supplement your own color commands. There are many macro files that implement color for the various `dvi` drivers that can support color. E.g., the PSTricks package works with a variety of DVI-to-PS drivers.

For example, suppose you have a macro that defines the color command `\gray`. `colortab.tex` requires that one of the following produce a gray line:

```
{\gray \hrule}
\gray{\hrule}
```

if you want to use this command to color the cells in tables. This is probably the case if the one of the following produces gray text:

```
{\gray I am gray!}
\gray{I am gray!}
```

`colortab.tex` contains macros for TeX's `\halign` primitive. Incorporating color into high-level macros based on the `\halign` primitive requires a case-by-case treatment. `colortab.tex` also contains macros for coloring cells LaTeX's various array environments, and for the LaTeX `longtable` environment that is defined in the `longtable` (or `longtabl`) style option. These can serve as examples that can be accommodated to other table macros. See the code itself for happy hacking.

2 TeX's halign primitive

To shade cells in an alignment, use

```
\coloralign
```

instead of `\halign`. Then, to color the columns in one or more rows, type

```
\CC
  row of colors\cr
  rows to be colored\cr
\ECC
```

For example:

```
\setbox\strutbox=\hbox{\vrule height11.5pt
  depth6.5pt width0pt}%
\vbox{\offinterlineskip
  \coloralign{%
      \vrule\strut\quad\hfil#\hfil\quad
      &\vrule\quad\hfil#\quad\vrule\cr
    \noalign{\hrule}%
    \CC
      \gray &\cr
      Tamarind&Chiplote\cr
    \ECC\noalign{\hrule}%
    \CC
      \lightgray &\gray\cr
      Lulu&Serrano\cr\noalign{\hrule}%
      Guanabana&Larga\cr
    \ECC\noalign{\hrule}%
}}
```

Tamarind	Chiplote
Lulu	Serrano
Guanabana	Larga

`\CC` and `\ECC` stand for "ColorCells" and "EndColorCells", respectively. You cannot change the name of `\ECC` with `\let` or `\def` (without redefining `\CC`), because it is really just a delimiter. This is also true of the first `\cr`, which marks the end of the row of color commands. Remember that only complete rows can go between `\CC` and `\ECC`. Where you include horizontal lines is generally inconsequential. You can have nested `\coloralign` environments, but the nested environment must be enclosed in brackets `{}`. There is no `\coloralign to` or `\coloralign spread` because the space inserted by `\tabskip` won't be shaded.

These macros are not very robust. You can make best use of them by knowing how they work. `\coloralign` just saves the preamble, and otherwise is identical to `\halign`. `\CC` finds the height of the rows that have to be colored, and then `\CC` draws a rectangle using TeX's line-drawing primitives in each cell, colored by the color commands included in the first line that follows `\CC`. E.g.,

```
\yellow &&\red \cr
```

draws a yellow rectangle in column 1, nothing in column 2, and a red rectangle in column 3. Then `\CC` goes back up the height of the rectangle, so that TeX's current point is back where it was when `\CC` started. At this point, `\CC` has finished its work. When the next rows of the alignment environment are processed by `\halign`, they are put down on top of the rectangles, and hence have colored backgrounds.

`\CC` finds the height of the rows to be colored by putting the rows into an `\halign` environment, using the preamble that was saved by `\coloralign`, and then measuring the height of the resulting box.

3 LaTeX array environments

Cells can be colored in a LaTeX array without using a special array environment (i.e., there is no LaTeX analog to `\coloralign`). Use `\LCC` instead of `\CC`, and use `\\` to end the row of color commands instead of `\cr`. For example:

```
\def\arraystretch{1.5}%
\begin{tabular}{|l|c|}\hline
  \LCC
    \gray & \\
    Tamarind & Chiplote \\ \hline
  \ECC
  \LCC
    \lightgray & \gray\\
    Lulu & Serrano\\ \hline
    Guanabana & Larga\\ \hline
  \ECC
\end{tabular}
```

Tamarind	Chiplote
Lulu	Serrano
Guanabana	Larga

The same caveats apply as with the `\coloralign` environment.

When `\LCC` and `\ECC` are used with Frank Mittelbach's `array.sty`, nested array-type environments and `\multicolumn` commands wipe out information needed by `\ECC`Here is a workaround: Put `\SP` ("SavePreamble") at the beginning of the array-type environment (right after the column declarations), and put `\RP` ("RestorePreamble") at the end of each line containing a `\multicolumn` command or nested array-type environment (after the `\\`, and before the `\ECC`). For example:

```
\begin{tabular}{|l|c|}\SP\hline
  \LCC
    \gray & \\
    \multicolumn{2}{c}{Tamarind}\\ \RP \hline
  \ECC
\end{tabular}
```

Further nesting (e.g., an array within a `\multicolumn`, or a `\multicolumn` or array within a nested array) sometimes works and sometimes doesn't. You will have to figure that one out for yourself.

4 longtable.sty

`longtable.sty`, by David Carlisle, defines the `longtable` environment, for making multipage tables. `\LCC` will not work with `longtable`. However, `colortab` contains other macros that will work, if you use `longtable.sty` in conjunction with Frank Mittelbach's `array.sty`. These macros have been tested only briefly, with version 3.04 of `longtable.sty` and version 2.1b of `array.sty`.

Before every column identifier in the environment's argument (e.g., `c`, `l`, `r`, `p`, `m` or `b`), put

`!{\LC}` If none of the below applies;

`!{\LCi}` If the column is preceded by one or more vertical lines;

`!{\LCii}` If the column is followed by two vertical lines;

`!{\LCiii}` If the column is preceded by one or more vertical lines and followed by two vertical lines.

`!{\LCz{`*len1*`}{`*len2*`}}` If `colortab` should back up by *len1* before drawing the background, and should draw the background *len2* shorter than the width of the column.

Remember that you have to do this for every column, not just the columns that you want to color.

Then include

`\LColors` *color* `&` *color* `& ... &` *color*`\\`

in the first row of the environment, and later on as well if you wish to change the colors. Here also you have to include every column, but you can leave an entry blank if you don't want any background color in that column.

The color comes out right, or at all, only after you have run the file enough times for `longtable.sty` to set the alignment correctly.

Here is an example. The output will appear in this documentation only if `longtable.sty` or `longtabl.sty` is installed on your system.

```
\LARGE
\begin{longtable}{|!{\LCiii}l||!{\LCi}c|!{\LCi}c|}\hline
  \LColors \gray & & \\
    Tamarind & Chiplote & Galanga\\ \hline
  \LColors \lightgray & & \gray\\
    Lulu & & Serrano\\ \hline
    Guanabana & Larga &\\ \hline
\end{longtable}
```

5 Coloring lines

Let's begin with the `\halign` environment. Changing the color of lines is easy, because if you write, say, `{\gray\hrule}`, then the line comes out gray. For example:

```
% Thicker lines and wider spacing give better view:
\setbox\strutbox=\hbox{%
  \vrule height15.5pt depth8.5pt width0pt}%
\def\Hrule{\hrule height 2.5pt}%
\def\Vrule{\vrule width 2.5pt}%
% Now the table:
\vbox{\offinterlineskip
  \halign{%
      {\lightgray\Vrule}\strut\quad\hfil#\hfil\quad
      &{\gray\Vrule}\quad\hfil#\quad\Vrule\cr
    \noalign{\Hrule}%
    Tamarind& Chiplote\cr\noalign{{\darkgray\Hrule}}%
    Lulu& Serrano\cr\noalign{\Hrule}%
    Guanabana& Larga\cr\noalign{{\lightgray\Hrule}}%
}}
```

Tamarind	Chiplote
Lulu	Serrano
Guanabana	Larga

With LaTeX, you can add an entry like

```
@{\hspace{\tabcolsep}{\gray\vrule}\hspace{\tabcolsep}}
```

to the argument of the alignment environment, instead of `|`, if you want to color the vertical line that is drawn. If using `array.sty`, you can try:

```
!{{\gray\vrule}}
```

To color horizontal lines with LaTeX, don't bother trying

```
{\gray\hline}
```

because it won't work. You write your own version of `\hline` and `\cline`, or use the non-aligned color commands described in the next section.

6 Non-aligned color with PSTricks

Here are a few other commands that can be useful for adding color to tables. **They only work with PSTricks, v0.93 or later.** *color* in this case is the name of the color, without the backslash. These fudge the color commands so that they do not have to be balanced with respect to TEX grouping. You can achieve the same thing using `\special{`*raw postscript*`}` and `\noalign`, if you know what you are doing. These should work with just about any alignment macro, include `\halign` and LATEX's `tabular` environment.

`\AC{`*color*`} ... \EAC`

These stand for `AlignColor` and `EndAlignColor`, respectively. *color* is the name of the color, without a backslash, rather than a color command. This can be used within a cell, but they do not have to be within the same cell, nor do they have to be properly nested with respect to TEX grouping. Generally, `\AC{`*color*`}` switches to *color*, and `\EAC` restores the color that would be in effect if the first `\AC` command were missing.

`\NAC{`*color*`} ... \ENAC`

These stand for `NoAlignColor` and `EndNoAlignColor`, respectively. These are like `\AC` and `\EAC`, but the color commands are put inside a `\noalign`. They can only appear at the end of a line, after `\\` or `\cr`.

Actually, these do not even have to be used in pairs.

Here is an example of how `\AC`, etc., can be used. to color lines in LATEX arrays. The output will appear in this documentation only if PSTricks is installed on your system:

```
\arrayrulewidth 1.5pt
\begin{tabular}{|l|c|}\hline
  Tamarind& Chiplote\\ \NAC{gray}\hline\ENAC
  Lulu& Serrano\\ \cline{1-1}
    \NAC{lightgray}\cline{2-2}\ENAC
  Guanabana\AC{lightgray} & \EAC Larga\\ \hline
\end{tabular}
```

Tamarind	Chiplote
Lulu	Serrano
Guanabana	Larga