

The ctable package*

Wybo Dekker
wybo@dekkerdocumenten.nl

April 30, 2011

Abstract

The `ctable` package provides a `ctable` command for the typesetting of table and figure floats. You will not need to type the usual nested `begin...end` sequences, as `ctable` is a command, not an environment. `ctable` has only 4 arguments, but the optional first one may hold many *key=value* pairs and makes `ctable` very flexible and extensible. It uses Simon Fear's `booktabs` package for better vertical spacing around horizontal rules and it provides facilities for making table footnotes.

1 Purpose

The `ctable` package lets you easily typeset captioned table and figure floats with optional footnotes. Both caption and footnotes will normally be forced within the width of the table. If the width of the table is specified, then `tabularx` will be used to typeset it, and one or more X column specifiers should be specified. Otherwise `tabular` will be used.

This package defines the commands `\ctable`, `\tnote` and `\tmark`, and four `\tabularnewline` generating commands. The latter generate reasonable amounts of whitespace around horizontal rules and are also useful for `tabulars` outside this package.

Since the `ctable` package imports the `array` and `booktabs` packages, all commands from those packages are available as well.

Note that, in line with the comments that Simon Fear made describing his `booktabs` package, vertical rules for column separation can be produced with `\ctable`, but no provisions are made to have them make contact with horizontal rules.

2 Usage

`\ctable` `\ctable` is called with 4 parameters, of which the first is optional:

```
\ctable[options]      % key=value,...
      {coldefs}        % for \begin{tabular}
      {foottable}      % zero or more \tnote commands (see below)
      {table rows}     % rows for the table
```

Options are given as *key=value* pairs, separated by comma's. Extra comma's, including one behind the last pair, don't hurt. Arguments to option should be put between braces if they contain comma's or equals signs.

3 Options

Currently the following option keys have been defined:

*This document corresponds to `ctable` v1.19, dated 2011/05/01.

<code>botcap</code>	put the caption at the bottom of the float instead of on top of it. See also: <code>topcap</code> .
<code>captionskip=...</code>	moves the caption relative to the table; the default is <code>0ex</code> , which puts captions at their default \LaTeX positions: a top caption's baseline at <code>1ex</code> above the top rule position of the table and a bottom caption's baseline at <code>4ex</code> below the bottom rule position.
<code>caption=...</code>	table caption; the braces are needed only if your caption contains a comma or an equals sign.
<code>cap=...</code>	for a short caption to go to the <code>\listoftables</code> . Without the <code>cap</code> option, the full caption will go into the <code>\listoftables</code> . If <code>cap</code> is given an empty value, no entry in the <code>\listoftables</code> will be made. This may be useful, for example, with the <code>continued</code> option.
<code>center</code>	center the table in the available text width; this is the default. See also: <code>left</code> , <code>right</code> .
<code>continued=...</code>	if used, the table will be numbered the same as the previous table. If used without an argument, the caption will be suffixed with ' (continued)', if used with an argument, the suffix will be the argument.
<code>doinside=...</code>	command to be run inside, just before the <code>tabular</code> or <code>tabularx</code> environment. You can use this, for example, for the adjustment of the font size with <code>\small</code> .
<code>figure</code>	produce a figure float instead of a table float. See also: <code>table</code> .
<code>framebg=r g b</code>	set the background color of the frame (the color inside the frame) to the given triplet of <i>rgb</i> -values. The values should be numbers between 0 and 1. The default is <code>1 1 1</code> (white).
<code>framefg=r g b</code>	set the foreground color of the frame (the rule color) to the given triplet of <i>rgb</i> -values. The values should be numbers between 0 and 1. The default is <code>0 0 0</code> (black).
<code>framerule=...</code>	draw a frame around the table with the given rule thickness. The default is <code>0pt</code> , so that no frame will be seen.
<code>framesep=...</code>	set the distance between the frame and the table to the given dimension. The default is <code>0pt</code> .
<code>label=...</code>	labels the float with <code>\label</code> .
<code>left</code>	left align the table in the available text width. See also: <code>center</code> , <code>right</code> .
<code>maxwidth=...</code>	like the <i>width</i> option, but any <i>X</i> column specifiers will be replaced with <code>l</code> if the resulting table width would thus stay within the specified maximum width. This is especially useful where the \LaTeX source is generated by a script.
<code>mincapwidth=...</code>	sets the minimum width of the float. Without this option, the width is set to that of the <code>tabular</code> , and the caption and footnotes are typeset within that width. This may be a problem with very narrow tables; <code>mincapwidth</code> can then be used to give the float a minimum width. The <code>tabular</code> will be centered in it.
<code>nonotespar</code>	typeset footnotes in a table; this is the default. See also: <code>notespar</code> .
<code>nosideways</code>	undo the <code>sideways</code> option. See also: <code>sideways</code> .
<code>nostar</code>	use the un-starred versions of the <code>table</code> and <code>figure</code> environments; this is the default
<code>nosuper</code>	in the footnote table, typeset footnote markers on the line, instead of superscripted.
<code>notespar</code>	typeset footnotes in a paragraph instead of in a table.
<code>pos=...</code>	float position, default: <code>tbp</code> .
<code>right</code>	right align the table in the available text width.
<code>sideways</code>	rotate table or figure by 90 degrees anticlockwise and put it on a separate page. With the <code>twoside</code> option for the standard \LaTeX document classes, rotation will be <code>-90</code> on even pages. If you use this option, the <code>pos</code> option is not allowed. See also: <code>nosideways</code> .
<code>star</code>	use the starred versions of the <code>table</code> and <code>figure</code> environments, which place the float over two columns when the <code>twocolumn</code> option or the <code>\twocolumn</code> command is active. See also: <code>nostar</code> .
<code>super</code>	in the footnote table, typeset footnote markers as superscripts; this is the default. See also: <code>nosuper</code> .
<code>table</code>	produce a table float (this is the default). See also: <code>figure</code> .
<code>topcap</code>	put the caption top of the float; this is the default. See also: <code>botcap</code> .
<code>width=...</code>	tabularx will be used to typeset the table at the specified width — one or more <i>X</i> column specifiers must be provided.

4 The width and maxwidth options

When L^AT_EX-sources containing tables are generated automatically by a script, it is often not known in advance what the maximum size of an l column will be. A good solution for this is to use an X specifier, typesetting the table at the text width with the **tabularx** package. However, this will result in too much white space in cases where the column contains small texts only. This problem can be solved by using the maxwidth option instead of the width option. The X specifiers will then be replaced with l as long as the width of the resulting table stays with the specified maximum width.

5 Tables wider than the text width

When you make a table wider than `\textwidth`, it will extend in the right margin. If it is a large table, occupying a whole page, you can use the geometry package and surround your ctable call with `\newgeometry{width=...,margin=...}` and `\restoregeometry`. However, both geometry commands imply `\clearpage`, so your table will appear on an otherwise empty page.

Alternatively, you can center the table on the paper, extending in both margins, by using the option `doinside=\hspace*{<dimen>}` with an appropriate negative `dimen`.

6 Setting option defaults: setupctable

Every call of `\ctable` resets the options to their defaults before evaluating the first (optional) argument. So if you make two ctables: `\ctable[left,...]` and `\ctable[...]`, the first will be left-aligned on the page, but the second, lacking the `left` option, will be centered, because that is the default. If you want all your tables left-aligned, it's more practical to change the default by calling `\setupctable{left}`, either in the preamble or somewhere in the body. In latter case only tables following the call will have their defaults changed.

`\setupctable`

`\setupctable` can set the defaults for all options except (of course) `caption`, `cap`, and `label`. Actually, the initial option defaults are set by calling `\setupctable` as follows:

```
\setupctable{
  captionskip=0pt,      framerule=0pt,      nostar,
  center,              framesep=0pt,      pos=tbp,
  continued=(continued), maxwidth=0pt,      super,
  doinside={},         mincapwidth=0pt,   table,
  framebg=1 1 1,       nonotespar,      topcap,
  framefg=0 0 0,       nosideways,     width=0pt
}
```

7 Other commands

`\tnote` `\tnote[label]{footnote text}` places ^{label} footnote text under the table. This command can only be used in `\ctable`'s third argument, i.e. the foottable argument described above. The label is optional, the default label is a single *a*. For more detailed control, you can also replace this command with something like `labeltext&footnotetext\NN`. The footnotes are placed under the table, without a rule. You therefore probably will want to use the `\LL` (last line) command if you use footnotes.

`\tmark` `\tmark[label]` this command places the superscripted label in the table. It is equivalent with `$^{\label}$`. The label is optional, the default label is a single *a*.

The newline generating commands are a combination of `\tabularnewline` and zero or one of **booktabs** `\toprule`, `\midrule` or `\bottomrule`. These combinations have been made, and short names have been defined, because source texts for complex tables often become very crowded:

`\NN` Normal Newline, generates just a normal new line. An optional `dimen` parameter inserts extra verti-

cal space under the line. Is an alias for `\tabularnewline`

`\FL` First Line, generates a new line and a thick rule with some extra space under it. An optional dimension parameter sets the line width; the default is 0.08em. Is an alias for `\toprule`

`\ML` Middle Line: generates a new line and a thin rule with some extra space over and under it. An optional dimension parameter sets the line width; the default is 0.05em. Is an alias for `\tabularnewline\midrule`

`\LL` Last Line: generates a new line and a thick rule with some extra space over it. An optional dimension parameter sets the line width; the default is 0.08em. Is an alias for `\tabularnewline\bottomrule`

These macros can be used outside `\ctable` constructs.

Finally, for completeness, here are some of **booktabs**' commands that may be useful:

`\toprule` `\toprule[<wd>]` where <wd> is the optional thickness of the rule.

`\midrule` `\midrule[<wd>]`.

`\bottomrule` `\bottomrule[<wd>]`.

`\cmidrule` `\cmidrule[<wd>](<trim>){a-b}` where <trim> can be r, l, or rl and the rule is drawn over columns a through b.

`\morecmidrules` `\morecmidrules` must be used to separate two successive `\cmidrules`.

`\addlinespace` `\addlinespace[<wd>]` inserts extra space between rows.

`\specialrule` `\specialrule{<wd>}{<abovespace>}{<belowspace>}`.

See the **booktabs** documentation for details.

8 Examples

Table 1 is an example taken from the related package `threeparttable` by Donald Arseneau, with an extra footnote. It was typeset with:

```
\ctable[
  cap      = The Skewing Angles,
  caption = The Skewing Angles ( $\beta$ ) for
             $\text{Mu(H)} + \text{X}_2$  and  $\text{Mu(H)} + \text{HX}$ ~\tmark,
  label    = nowidth,
  pos      = h
]{rlcc}{
  \tnote{for the abstraction reaction,
     $\text{Mu} + \text{HX} \rightarrow \text{MuH} + \text{X}$ .}
  \tnote[b]{1 degree =  $\pi/180$  radians.}
  \tnote[c]{this is a particularly long note, showing that
    footnotes are set in raggedright mode as we don't like
    hyphenation in table footnotes.}
}{
  & &  $\text{H(Mu)} + \text{F}_2$  &  $\text{H(Mu)} + \text{Cl}_2$  & \FL
  &  $\beta(\text{H})$  &  $80.9^\circ$ \tmark[b] &  $83.2^\circ$  & \NN
  &  $\beta(\text{Mu})$  &  $86.7^\circ$  &  $87.7^\circ$  & \LL
}
```

Table 1: The Skewing Angles (β) for $\text{Mu(H)} + \text{X}_2$ and $\text{Mu(H)} + \text{HX}$ ^a

	H(Mu) + F ₂	H(Mu) + Cl ₂
$\beta(\text{H})$	80.9 ^{°b}	83.2 [°]
$\beta(\text{Mu})$	86.7 [°]	87.7 [°]

^a for the abstraction reaction,

$\text{Mu} + \text{HX} \rightarrow \text{MuH} + \text{X}$.

^b 1 degree = $\pi/180$ radians.

^c this is a particularly long note, showing that footnotes are set in raggedright mode as we don't like hyphenation in table footnotes.

Table 2 is an example with a width specification, taken from the `tabularx` documentation, with the vertical rules removed. By using the trimming parameters of the `booktabs` `\cmidrule` command, some of the horizontal splitting was regained. The left option left aligns the table. It was typeset with:

```
\ctable[
  caption = Example with a specified width of 100mm,
  label    = width,
  width    = 100mm,
  pos      = ht,
  left
]{c>{\raggedright}Xc>{\raggedright}X}{
  \tnote{footnotes are placed under the table}
}{
  \multicolumn{4}{c}{Example using tabularx} & \FL
  \multicolumn{2}{c}{Multicolumn entry!} & THREE & FOUR & \NN
  \cmidrule(r){1-2}\cmidrule(rl){3-3}\cmidrule(l){4-4}
  one&
  The width of this column depends on the width of the table.\tmark &
  three&
  Column four will act in the same way as column two, with the same width.
}
```

Table 2: Example with a specified width of 100mm			
Example using tabularx			
	Multicolumn entry!	THREE	FOUR
one	The width of this column depends on the width of the table. ^a	three	Column four will act in the same way as column two, with the same width.

^a footnotes are placed under the table

Figures, even single ones, are always put in tabular cells. This is not particularly handy for single pictures, but it eases the construction of arrays of pictures, including sub-captions, delineation, and spacing. For a small example, which also shows how you can simplify the construction of figure arrays, see subsection 9.9 on page 10.

9 Option examples

In the following, small examples will be shown illustrating the effect of options. In the left column the relevant part of the source is shown, in the right column you see the result. In most cases you see a standard example on a light yellow background, followed by one or more variations on a light blue background. Where necessary, the example will show boxes to indicate the page and the text body.

9.1 center, left, right

These options align the float in the page; the default is `center`:

<pre>\ctable[caption = Centered,]{c}{\FL Table's first row\LL}</pre>	<div>Table 1: Centered</div> <div>Table's first row</div>
<pre>\ctable[caption = Left, left]{c}{\FL Table's first row\LL}</pre>	<div>Table 1: Left</div> <div>Table's first row</div>
<pre>\ctable[caption = Right, right]{c}{\FL Table's first row\LL}</pre>	<div>Table 1: Right</div> <div>Table's first row</div>

9.2 super, nosuper

Footnote markers in `ctable` are typeset superscripted by default. Use the `nosuper` option to place them on the base line:

<pre>\table{c}{ \tnote{First footnote} \tnote[b]{Second footnote} }\FL Table's\tnote{ first\tnote[b]\ row\LL}</pre>	<table><tr><td>Table's^a first^b row</td></tr><tr><td>^a First footnote</td></tr><tr><td>^b Second footnote</td></tr></table>	Table's ^a first ^b row	^a First footnote	^b Second footnote
Table's ^a first ^b row				
^a First footnote				
^b Second footnote				
<pre>\ctable[nosuper]{c}{ \tnote[a.]{First footnote} \tnote[b.]{Second footnote} }\FL Table's\tnote{ first\tnote[b]\ row\LL}</pre>	<table><tr><td>Table's^a first^b row</td></tr><tr><td>^{a.} First footnote</td></tr><tr><td>^{b.} Second footnote</td></tr></table>	Table's ^a first ^b row	^{a.} First footnote	^{b.} Second footnote
Table's ^a first ^b row				
^{a.} First footnote				
^{b.} Second footnote				

9.3 notespar, nonotespar

By default, footnotes in `ctable` are typeset in a table, one line per note. This corresponds with the `nonotespar` option. You can also typeset them in a paragraph, one after the other, by using the `notespar` option:

<pre>\ctable{c}{ \tnote{First note} \tnote[b]{Second note} \tnote[c]{Third note} }{\FL Table's\tnote{first}\tnote[b]\ row with footnotes\tnote[c]\LL}</pre>	<table><tr><th>Table's^a first^b row with footnotes^c</th></tr><tr><td>^a First note</td></tr><tr><td>^b Second note</td></tr><tr><td>^c Third note</td></tr></table>	Table's ^a first ^b row with footnotes ^c	^a First note	^b Second note	^c Third note
Table's ^a first ^b row with footnotes ^c					
^a First note					
^b Second note					
^c Third note					
<pre>\ctable[notespar]{c}{ \tnote[a]{First note.} \tnote[b]{Second note.} \tnote[c]{Third note, this one is a little longer and forces a new line at the end.\\} \tnote[d]{And here is e very long note: \input{thuan}} }{\FL Table's\tnote{first}\tnote[b]\ row with footnotes\tnote[c]\LL}</pre>	<table><tr><th>Table's^a first^b row with footnotes^c</th></tr><tr><td>^a First note. ^b Second note. ^c Third note, this one is a little longer and forces a new line at the end.</td></tr><tr><td>^d And here is e very long note: Had our solar system included two suns, the problem would have involved three bodies (the two suns and each planet), and chaos would have been immediately obvious. Planets would have had erratic and unpredictable orbits, and creatures living on one of these planets would never have been able to perceive the slightest harmony. Nor would it have occurred to them that the universe might be ruled by laws and that it is up to man's intellect to discover them. Besides, it is not at all obvious that life and conscience could even emerge in such a chaotic system.</td></tr></table>	Table's ^a first ^b row with footnotes ^c	^a First note. ^b Second note. ^c Third note, this one is a little longer and forces a new line at the end.	^d And here is e very long note: Had our solar system included two suns, the problem would have involved three bodies (the two suns and each planet), and chaos would have been immediately obvious. Planets would have had erratic and unpredictable orbits, and creatures living on one of these planets would never have been able to perceive the slightest harmony. Nor would it have occurred to them that the universe might be ruled by laws and that it is up to man's intellect to discover them. Besides, it is not at all obvious that life and conscience could even emerge in such a chaotic system.	
Table's ^a first ^b row with footnotes ^c					
^a First note. ^b Second note. ^c Third note, this one is a little longer and forces a new line at the end.					
^d And here is e very long note: Had our solar system included two suns, the problem would have involved three bodies (the two suns and each planet), and chaos would have been immediately obvious. Planets would have had erratic and unpredictable orbits, and creatures living on one of these planets would never have been able to perceive the slightest harmony. Nor would it have occurred to them that the universe might be ruled by laws and that it is up to man's intellect to discover them. Besides, it is not at all obvious that life and conscience could even emerge in such a chaotic system.					

9.4 continued

The `continued` option suffixes the caption with '(continued)', and lowers the table number by one, so that it obtains the same number as the previous table. This option can be given an argument to replace the default suffix:

<pre>\ctable[caption = Caption, mincapwidth = 50mm,]{c}{\FL Table's first row\LL}</pre>	<table><tr><td>Table 1: Caption</td></tr><tr><td>Table's first row</td></tr></table>	Table 1: Caption	Table's first row
Table 1: Caption			
Table's first row			

```
\cetable[
  caption = Caption,
  mincapwidth = 50mm,
  continued
]{c}{\FL Table's first row\LL}
```

Table 1: Caption (continued)

Table's first row

```
\cetable[
  caption = Caption,
  mincapwidth = 50mm,
  continued = \textit{(contd)}
]{c}{\FL Table's first row\LL}
```

Table 1: Caption (*contd*)

Table's first row

9.5 mincapwidth

`cetable` forces caption and footnotes to stay within the width of the table. Sometimes, however, tables are so narrow, that this is not really what you want. In such cases, use the `mincapwidth` option to give caption and footnotes some extra room:

```
\cetable[
  caption = a lengthy caption
]{c}{\FL row1\LL}
```

Table 1:
a
lengthy
caption

row1

```
\cetable[
  mincapwidth = 40mm,
  caption = a lengthy caption
]{c}{\tnote{this is a footnote}}
{\FL row1\tmark\LL}
```

Table 1: a lengthy caption

row1 ^a

^a this is a footnote

You can set `mincapwidth` to a large value, say `\hsize`, if you want a one-line caption. Note, however, that this may influence the horizontal positioning of the table: values larger than `\hsize` will move a centered table out of the center, a value of `\hsize` will prevent the `left` and `right` options to do their work, because the table is already captured between the left and right margins.

9.6 maxwidth

When \LaTeX -sources containing tables are generated automatically by a script, it is often not known in advance what the maximum size of an l column will be. A good solution for this is to use an X specifier, typesetting the table at the text width with the `tabularx` package. However, this will result in too much white space in cases where the column contains small texts only. This problem can be solved by using the `maxwidth` option instead of the `width` option. The X specifiers will then be replaced with l as long as the width of the resulting table stays with the specified maximum width.

```
\cetable[
  framerule = .1pt,
  maxwidth=3cm
]{lX}{\FL 1 & first row\LL}
```

1	first row
---	-----------

```
\cetable[
  framerule = .1pt,
  maxwidth=3cm
]{lX}{\FL 1 & test\LL}
```

1	test
---	------

9.7 framerule

The following examples show the use of frames and backgrounds. Every table is typeset by `ctable` with a frame around it, but the frame is, by default, drawn with a zero width line, and is therefore invisible. You can make it visible by either changing the linewidth to a positive value or by giving it a background color, which will be used to fill the frame.

Here is a simple table without a frame, followed by one with a red, 1pt thick frame:

```
\ctable[
  caption = Frame,
]{c}{c}{\FL Table's first row\LL}
```

Table 1: Frame

Table's first row

```
\ctable[
  caption = Frame,
  framerule = 2pt,
  framefg = .8 0 0
]{c}{c}{\FL Table's first row\LL}
```

Table 1: Frame

Table's first row

As you see, the frame fits closely to the first (`\FL`) and last (`\LL`) table lines. This can be a reason to either remove those lines, or to introduce some whitespace between the frame and the table with the `framesep` option:

```
\ctable[
  caption = Frame,
  framerule = 1pt,
  framefg = .8 0 0,
  framesep=10pt
]{c}{c}{\FL Table's first row\LL}
```

Table 1: Frame

Table's first row

And finally, we could also frame the table by giving it a, say, yellow background instead of a red frame line, or even do both:

```
\ctable[
  caption = Frame,
  framebg = 1 1 0,
  framesep=10pt
]{c}{c}{\FL Table's first row\LL}
```

Table 1: Frame

Table's first row

```
\ctable[
  caption = Frame,
  framerule = 2pt,
  framesep = 5pt,
  framebg = 1 1 0,
  framefg = 1 0 0,
  framesep=10pt
]{c}{c}{\FL Table's first row\LL}
```

Table 1: Frame

Table's first row

9.8 captionskip

The distance between a top caption and the table is 2ex, but it can be varied with captionskip:

```
\cetable[
  caption = Caption,
]{c}{\FL Table's first row\LL}
```

Table 1: Caption

Table's first row

```
\cetable[
  caption = Caption,
  captionskip = 1ex,
]{c}{\FL Table's first row\LL}
```

Table 1: Caption

Table's first row

This works for bottom caption, too:

```
\cetable[
  caption = Caption,
  botcap
]{c}{\FL Table's first row\LL}
```

Table's first row

Table 1: Caption

```
\cetable[
  caption = Caption,
  captionskip = -2ex,
  botcap
]{c}{\FL Table's first row\LL}
```

Table's first row

Table 1: Caption

9.9 figure, botcap

By default, ctable generates a table float, but with the figure option, a figure float is generated instead. The caption stays on top, so if you are accustomed to have bottom caption for your figures, you will probably also need the botcap option:

```
\cetable[caption = a table]{c}{
}{\FL Table's first row\LL}
```

Table 1: a table

Table's first row

```
\newcommand{\F}[1]{
  \includegraphics[width=\hsize]{#1}
}
\newcolumntype{H}[1]{>\hsize=#1\hsize}X}
\cetable[
  caption = a figure,
  figure, botcap,
  width=.4\hsize,
]{H{.4}H{.6}}{\FL
  \F{penguin}& \F{lion}\LL
}
```



Figure 1: a figure

9.10 sideways

The `sideways` option creates a landscape table with its head pointing at the spine — when the documentclass’ `twoside` option has been used, that is. The following examples show the effect of the `sideways` option, first on page one, then on page 2. Note that the `caption` option has not been used, so no caption appears:

```
\ctable[
]{c}{\FL first row\LL}
```

first row

```
\ctable[
  sideways
]{c}{\FL first row\LL}
```

first row

```
\setcounter{page}{2}
\ctable[
  sideways
]{c}{\FL first row\LL}
```

first row

10 Implementation

```

1 \RequirePackage{color,xkeyval,array,tabularx,booktabs,rotating}
2 \def\NN{\tabularnewline}
3 \def\FL{\toprule}
4 \def\ML{\NN\midrule}
5 \def\LL{\NN\bottomrule}
6 \def\@defaultctblfgcolor#1 #2 #3={\definecolor{\@defaultctblframefg}{rgb}{#1,#2,#3}}
7 \def\@defaultctblbgcolor#1 #2 #3={\definecolor{\@defaultctblframebg}{rgb}{#1,#2,#3}}
8 \def\@ctblfgcolor#1 #2 #3={%
9   \definecolor{\@ctblframefg}{rgb}{#1,#2,#3}
10  \def\@ctblfgactual{\@ctblframefg}}
11 \def\@ctblbgcolor#1 #2 #3={%
12   \definecolor{\@ctblframebg}{rgb}{#1,#2,#3}
13   \def\@ctblbgactual{\@ctblframebg}}
14 \def\@ctbltextsuperscript#1{%
15   \ifx\@ctblsuper\@ctbltrue\textsuperscript{#1}\else\footnotesize#1\fi
16 }
17 \def\@ctbltrue{1}
18 \def\@ctblfalse{0}
19 \def\@ctblinside{\relax}
20 \newdimen\@ctblframesep \newdimen\@defaultctblframesep
21 \newdimen\@ctblframerule \newdimen\@defaultctblframerule
22 \newdimen\@ctblwidth \newdimen\@defaultctblwidth
23 \newdimen\@ctblcaptionskip \newdimen\@defaultctblcaptionskip
24 \newdimen\@ctblmaxwidth \newdimen\@defaultctblmaxwidth
25 \newdimen\@ctblmincapwidth \newdimen\@defaultctblmincapwidth
26 \newdimen\@ctblw % the final width
27 \newdimen\@ctblfloatwidth
28 \newdimen\@ctbloldsep
29 \newdimen\@ctbloldrule

```

Allocate box registers so that we can determine the widths of the tables

```
30 \newbox\ctbl@t % tabular saved and measured here
```

Option setting commands from keyval. The table position (here, top, bottom, page) gets a special treatment, since L^AT_EX does not expand commands there. So instead of putting things like `tbp` in a command like `\@ctblbegin` we put `\begin{table}[tbp]` in it.

```

31
32 \define@key{suctbl}{botcap}[]{\let\@defaultctblbotcap\@ctbltrue}
33 \define@key{suctbl}{captionkip}{\@defaultctblcaptionkip=#1}
34 \define@key{suctbl}{center}[]{\let\@defaultctblalign\centering}
35 \define@key{suctbl}{continued}{\def\@defaulttextcontinued{#1}}
36 \define@key{suctbl}{doinside}{\def\@defaultctblinside{#1}}
37 \define@key{suctbl}{figure}[]{\def\@defaultctbltaborfig{figure}}
38 \define@key{suctbl}{framebg}{\@defaultctblbgcolor#1=}
39 \define@key{suctbl}{framefg}{\@defaultctblfgcolor#1=}
40 \define@key{suctbl}{framerule}{\@defaultctblframerule=#1}
41 \define@key{suctbl}{framesep}{\@defaultctblframesep=#1}
42 \define@key{suctbl}{left}[]{\let\@defaultctblalign\raggedright}
43 \define@key{suctbl}{maxwidth}{\@defaultctblmaxwidth=#1}
44 \define@key{suctbl}{mincapwidth}{\@defaultctblmincapwidth=#1}
45 \define@key{suctbl}{nonotespar}[]{\let\@defaultctblnotespar\@ctblfalse}
46 \define@key{suctbl}{nosideways}[]{\let\@defaultctblsideways\empty}
47 \define@key{suctbl}{nostar}[]{\def\@defaultctblstarred{}}
48 \define@key{suctbl}{nosuper}[]{\let\@defaultctblsuper\@ctblfalse}
49 \define@key{suctbl}{notespar}[]{\let\@defaultctblnotespar\@ctbltrue}
50 \define@key{suctbl}{pos}{\def\@defaultctblpos{#1}}
51 \define@key{suctbl}{right}[]{\let\@defaultctblalign\raggedleft}
52 \define@key{suctbl}{sideways}[]{\def\@defaultctblsideways{sideways}}
53 \define@key{suctbl}{star}[]{\def\@defaultctblstarred{*}}
54 \define@key{suctbl}{super}[]{\let\@defaultctblsuper\@ctbltrue}
55 \define@key{suctbl}{table}[]{\def\@defaultctbltaborfig{table}}
56 \define@key{suctbl}{topcap}[]{\let\@defaultctblbotcap\@ctblfalse}
57 \define@key{suctbl}{width}{\@defaultctblwidth=#1}

```

```

58
59 \newcommand{\setupctable}[1]{\setkeys{suctbl}{#1}}
60 \setupctable{
61   table,
62   continued=(continued),
63   topcap,
64   framerule=0pt,
65   captionskip=0pt,
66   framesep=0pt,
67   width=0pt,
68   maxwidth=0pt,
69   mincapwidth=0pt,
70   nosideways,
71   center,
72   nostar,
73   super,
74   nonotespar,
75   doinside={},
76   framebg=1 1 1,
77   framefg=0 0 0,
78 }
79
80 \define@key{ctbl}{botcap}[]{\let\@ctblbotcap\@ctbltrue}
81 \define@key{ctbl}{captionskip}{\@ctblcaptionskip=#1}
82 \define@key{ctbl}{caption}{\def\@ctblcaption{#1}}
83 \define@key{ctbl}{cap}{\def\@ctblcap{#1}}
84 \define@key{ctbl}{center}[]{\let\@ctblalign\centering}
85 \define@key{ctbl}{continued}{\@defaulttextcontinued}{\def\@ctblcontinued{#1}}
86 \define@key{ctbl}{doinside}{\def\@ctblinside{#1}}
87 \define@key{ctbl}{figure}[]{\def\@ctbltabfig{figure}}
88 \define@key{ctbl}{framebg}{\@ctblbgcolor#1=}
89 \define@key{ctbl}{framefg}{\@ctblfgcolor#1=}
90 \define@key{ctbl}{framerule}{\@ctblframerule=#1}
91 \define@key{ctbl}{framesep}{\@ctblframesep=#1}
92 \define@key{ctbl}{label}{\def\@ctbllabel{#1}}
93 \define@key{ctbl}{left}[]{\let\@ctblalign\raggedright}
94 \define@key{ctbl}{maxwidth}{\@ctblmaxwidth=#1}
95 \define@key{ctbl}{mincapwidth}{\@ctblmincapwidth=#1}
96 \define@key{ctbl}{nonotespar}[]{\let\@ctblnotespar\@ctblfalse}
97 \define@key{ctbl}{nosideways}[]{\let\@ctblsideways\empty}
98 \define@key{ctbl}{nostar}[]{\def\@ctblstarred{}}
99 \define@key{ctbl}{nosuper}[]{\let\@ctblsuper\@ctblfalse}
100 \define@key{ctbl}{notespar}[]{\let\@ctblnotespar\@ctbltrue}
101 \define@key{ctbl}{pos}{\def\@ctblpos{#1}\def\@ctblbegin{\@ctblbeg{#1}}}
102 \define@key{ctbl}{right}[]{\let\@ctblalign\raggedleft}
103 \define@key{ctbl}{sideways}[]{\def\@ctblsideways{sideways}}
104 \define@key{ctbl}{star}[]{\def\@ctblstarred{*}}
105 \define@key{ctbl}{super}[]{\let\@ctblsuper\@ctbltrue}
106 \define@key{ctbl}{table}[]{\def\@ctbltabfig{table}}
107 \define@key{ctbl}{topcap}[]{\let\@ctblbotcap\@ctblfalse}
108 \define@key{ctbl}{width}{\@ctblwidth=#1}

```

A caption will only be generated if the *caption* option was used, with a non-empty value. If so, it goes in the lot/lof, unless the *cap* option specified a different (probably shorter) value for it. A *cap* option with an empty value inhibits a tof/lof entry.

```

109 \def\@ctblCaption{
110   \ifx\@ctblcap\undefined\let\@ctblcap\@ctblcaption\fi
111   \ifx\@ctblcaption\empty\else
112     \def\@ctblcaptionarg{\ifx\@ctbllabel\empty\else\label{\@ctbllabel}\fi
113       \@ctblcaption\ \@ctblcontinued\strut}
114     \ifx\@ctblcap\empty
115       \caption[]{\@ctblcaptionarg}
116     \else
117       \caption[\@ctblcap]{\@ctblcaptionarg}

```

```

118     \fi
119 \fi
120 }

Need to redefine X columntype, but the array package would generate a warning. So first set the
type to be redefined to \undefined to suppress the warning. Save the standard X type once in the
new type Y
121 \newcolumntype{Y}{X}
122 \def\@ctblXcolumntype#1{%
123   \let\NC@find@X\undefined
124   \newcolumntype{X}{#1}%
125 }
126 \def\@ctblframe#1#2#3{%
127   \@ctbloldsep\fbboxsep\fbboxsep\@ctblframesep%
128   \@ctbloldrule\fbboxrule\fbboxrule\@ctblframerule%
129   \fcolorbox{#1}{#2}{\fbboxsep\@ctbloldsep\fbboxrule\@ctbloldrule #3}%
130 }
131 \newcommand{\tnote}[2][a]{%
132   \ifx\@ctblnotespar\@ctbltrue%
133     \@ctbltextsuperscript{\normalfont\textit{#1}}\,,#2
134   \else%
135     \hbox{\@ctbltextsuperscript{\normalfont\textit{#1}}}&#2\NN
136   \fi
137 }
138 \newcommand{\tmark}[1][a]{%
139   \hbox{\textsuperscript{\normalfont\textit{#1}}}}
140 \newcommand{\ctable}[4][l]{%
141   \let\@ctbltaborfig \@defaulttctbltaborfig
142   \let\@ctblalign \@defaulttctblalign
143   \let\@ctblsideways \@defaulttctblsideways
144   \let\@ctblcontinued \empty
145   \let\@ctblpos \@defaulttctblpos
146   \let\@ctblcaption \empty
147   \let\@ctblcap \undefined
148   \let\@ctbllabel \empty
149   \let\@ctblbotcap \@defaulttctblbotcap
150   \let\@ctblstarred \@defaulttctblstarred
151   \let\@ctblsuper \@defaulttctblsuper
152   \let\@ctblnotespar \@defaulttctblnotespar
153   \let\@ctblldoinside \@defaulttctblldoinside
154   \@ctblframerule \@defaulttctblframerule
155   \@ctblcaptionskip \@defaulttctblcaptionskip
156   \@ctblframesep \@defaulttctblframesep
157   \@ctblwidth \@defaulttctblwidth
158   \@ctblmaxwidth \@defaulttctblmaxwidth
159   \@ctblmincapwidth \@defaulttctblmincapwidth
160   \def\@ctblfgactual {\@defaulttctblframefg}
161   \def\@ctblbgactual {\@defaulttctblframebg}
162   \def\@ctblbeg {\begin{\@ctblsideways\@ctbltaborfig\@ctblstarred}}
163   \def\@ctblbegin {\@ctblbeg}
164   \def\@ctblend {\end{\@ctblsideways\@ctbltaborfig\@ctblstarred}}
165   \setkeys{ctbl}{#1}

```

It makes no sense to use *width* together with *maxwidth* or *pos* together with *sideways*

```

166   \ifdim\@ctblwidth=0pt\else
167     \ifdim\@ctblmaxwidth=0pt\else
168       \PackageError{ctable}{
169         You may not use the width and maxwidth options together}{
170         Use either width or maxwidth}
171     \fi
172   \fi
173   \ifx\@ctblpos\empty
174     \ifx\@ctblsideways\empty\else
175       \PackageError{ctable}{
176         You may not use the pos and sideways options together}{

```

```

177         Rotated tables and figures are always typeset on a separate page}
178     \fi
179 \fi

```

It makes no sense to label a captionless table, because the label can't be placed, leaving the user wondering why references to the table get a ??

```

180 \ifx\@ctblcaption\empty
181     \ifx\@ctbllabel\empty\else
182         \PackageError{ctable}{
183             You may not label a captionless table}{
184             Such a label can't be referenced}
185     \fi
186 \fi

```

save the table contents in a box, so we can determine its width, initially, save the table typeset with the tabular environment:

```

187 \sbox\ctbl@t{%
188     \@ctblXcolumnstype{l}% temporarily make type X = 1
189     \@ctblframe{\@ctblfgactual}{\@ctblbgactual}{%
190         \@ctblinside
191         \begin{tabular}{#2}
192             #4%
193         \end{tabular}%
194     }%
195 }%

```

then look if we'll need the tabularx environment:

```

196 \newif\if@ctblusex\@ctblusexfalse
197 \ifdim\@ctblmaxwidth=0pt
198     \ifdim\@ctblwidth=0pt
199         \else
200             \@ctblusextrue
201         \fi
202     \else
203         \ifdim\wd\ctbl@t>\@ctblmaxwidth
204             \@ctblusextrue
205         \fi
206     \fi

```

```

207 %
208 % if so, replace tabular with tabularx:
209 %

```

```

210 \if@ctblusex
211     \sbox\ctbl@t{%
212         \@ctblXcolumnstype{Y}% restore X
213         \@ctblframe{\@ctblfgactual}{\@ctblbgactual}{%
214             \@ctblinside
215             \begin{tabularx}{\ifdim\@ctblwidth>0pt\@ctblwidth\else\@ctblmaxwidth\fi}{#2}
216                 #4%
217             \end{tabularx}%
218         }%
219     }%
220 \fi

```

the `ctbl@t` box now contains the table as we want to typeset it; determine its width:

```

221 \@ctblw=\wd\ctbl@t

```

Now find the width of the float, `\@ctblfloatwidth`; everything in it will be centered within that width. Normally we'll use the width of the table, `\@ctblw`, but if the mincapwidth, `\@ctblmincapwidth` was set wider than the table, that will be used:

```

222 \@ctblfloatwidth=\ifdim\@ctblmincapwidth>\@ctblw
223     \@ctblmincapwidth
224 \else
225     \@ctblw
226 \fi

```

`\@ctblbegin` is now defined as something like `\begin{table}[tbp]`.

```

227 \@ctblbegin

```

```

228 \ifx\@ctblcontinued\empty\else\addtocounter{\@ctbltaborfig}{-1}\fi
229 \@ctblalign
230 \begin{minipage}{\@ctblfloatwidth}\parindent0pt
231 \ifx\@ctblbotcap\@ctblfalse\@ctblCaption\vskip\@ctblcaptionskip\fi
232 \centering{\usebox\ctbl@t} % insert the tabular
233 \def\@ctblfootnotes{#3}%
234 \ifx#3\empty\else{% append footnotes, if any
235 \footnotesize
236 \ifx\@ctblnotespar\@ctbltrue%
237 \[\.2ex]
238 \begin{minipage}{\hsize}%
239 #3%
240 \end{minipage}%
241 \else%
242 \[
243 \begin{tabularx}{\hsize}{r@{\,}>\{\raggedright\}X}
244 #3%
245 \end{tabularx}%
246 \fi
247
248 }
249 \fi
250 \ifx\@ctblbotcap\@ctbltrue\vskip\@ctblcaptionskip\@ctblCaption\fi
251 \end{minipage}
252 \@ctblend
253 }

```

Change History

v1.00	General: First release. 1	v1.08	General: Standardized file setup following http://www.ctan.org/tex-archive/info/dtxtut/dtxtut.pdf mincapwidth option added Moved newdimen definition outside ctable macro 1
v1.01	General: Making use of booktabs package . . . 1		
v1.02	General: Using keyval to reduce args to 4 . . . 1		
v1.03	General: Many syntactic corrections, thanks to Johannes Braams 1	v1.09	General: Added option nosuper; corrected incorrect positioning when table is wider than mincapwidth 1
v1.04	General: Caption, if empty, will not be type-set rotate option added star option added to use table* and figure* environments . . . 1	v1.10	General: Footnote markers now stay superscript with nosuper. Documentation: added many examples for the options. Corrected some unwanted white space in captions. Caption package included to correct booktabs errors in caption position. And for later use of its facilities. *Captionskip option redefined*: Opt value now corresponds to LaTeX defaults 1
v1.05	General: maxwidth option added 1		
v1.06	General: left, right and center options added framesep,rule,fg,bg options added error in width-setting corrected 1		
v1.06a	General: two errors corrected: made setting fboxsep and fboxrule only temporary removed superfluous space after tabulars . . . 1	v1.11	General: Added some percent signs at EOL to prevent whitespace, Removed xspace usage - caused overfull badness 1
v1.06b	General: Added several at eol to remove superfluous whitespace occurring sometimes 1	v1.12	General: Option notespar added 1
v1.07	General: Added option sideways, option rotate now obsolete; added option caption-skip 1	v1.13	General: cap option with empty argument will not be inserted in lot/lof Added option continued, for continuation tables: same number as previous table, ‘(continued’ added to caption. 1

v1.14	General: nosuper propagation to later tables prohibited added option doinside use of (obsolete) carom.sty for docs discontinued empty labels not created newcolumn type warnings removed caption package not needed anymore	1	par option now generates fully justified notes	1
v1.15	General: removed whitespace before tables, corrected marginpars in the documentation	1	v1.17	General: did not suppress lot/lof entry notes-par option now generates fully justified notes
v1.16	General: did not suppress lot/lof entry notes-		v1.18	General: added setupctable for option defaults added complement for several options (topcap, nosideways, et cetera
			v1.19	General: sideways option did not work anymore; corrected
				1