

# The `delarray` package\*

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This file is maintained by the L<sup>A</sup>T<sub>E</sub>X Project team.  
Bug reports can be opened (category `tools`) at  
<https://latex-project.org/bugs.html>.

## 1 Examples

The addition to `array.sty` added in `delarray.sty` is a system of implicit `\left` `\right` pairs. If you want an array surrounded by parentheses, you can enter:  
`\begin{array}{cc}` ...

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

Similarly if an environment equivalent to PLAIN T<sub>E</sub>X's `\cases` could be defined by:  
`\begin{array}\{{1L}`. ...

$$f(x) = \begin{cases} 0 & \text{if } x = 0 \\ \sin(x)/x & \text{otherwise} \end{cases}$$

Here `L` is supposed to denote a column of left aligned L-R text. It may be defined via: `\newcolumntype{L}{>{\$}l<{\$}}`, as discussed in `array.sty`. Note that as the delimiters must always be used in pairs, the ‘.’ must be used to denote a ‘null delimiter’.

This feature is especially useful if the `[t]` or `[b]` arguments are also used. In these cases the result is not equivalent to surrounding the environment by `\left...\right`, as can be seen from the following example:

$$\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} \quad \text{not} \quad \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$$

```
\begin{array}[t]{c} 1\2\3 \end{array}
\begin{array}[c]{c} 1\2\3 \end{array}
\begin{array}[b]{c} 1\2\3 \end{array}
\quad \mbox{not} \quad
```

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```

\left(\begin{array}[t]{c} 1\2\3 \end{array}\right)
\left(\begin{array}[c]{c} 1\2\3 \end{array}\right)
\left(\begin{array}[b]{c} 1\2\3 \end{array}\right)

```

## 2 The Macros

```

1 \*package
2 \RequirePackage{array}[1994/02/03]

\@tabarray This macro tests for an optional bracket and then calls up \@array or
\@array[c] (as default).
3 \def\@tabarray{\ifnextchar[{\@array}{\@array[c]}}

\@array This macro tests for an optional delimiter before the left brace of the main pream-
ble argument. If there is no delimiter, \@arrayleft and \@arrayright are made
a no-ops, and \@array is called with the positional argument. Otherwise call
\@delarray.
4 \def\@array[#1]{\ifnextchar\bgroup
5   {\let\@arrayleft\relax\let\@arrayright\relax\@array[#1]}%
6   {\@delarray[#1]}}

\@delarray We now know that we have an array (or tabular) with delimiters.
7 \def\@delarray[#1]#2#3#4{%

The following line is completely redundant but it does catch errors involving de-
limiters before the processing of the alignment begins. A common error is likely
to be omitting the ‘.’ in a \cases-type construction. This causes the first token
of the alignment to be gobbled, possibly causing lots of spurious errors before the
cause of the error, the missing delimiter, is discovered as \@arrayright puts the
alignment and the delimiters together.
8   \setbox\z@\hbox{${\left#2\right#4}$}%

In the case of a ‘c’ argument we do not need to rebox the alignment, so we can
define \@arrayleft and \@arrayright just to insert the delimiters.
9   \if#1c\def\@arrayleft{\left#2}\def\@arrayright{\right#4}%

Otherwise we (should) have a [t] or [b] argument, so first we store the alignment,
without delimiters in box0.
10  \else\def\@arrayleft{\setbox\z@}%

Then after the alignment is finished:
11  \def\@arrayright{%

Calculate the amount the box needs to be lowered (this will be negative in the
case of [b]). A little bit of arithmetic cf. the TEXBook, Appendix G, rule 8. We
calculate the amount this way, rather than just taking the difference between the
depth of box0 and the depth of the box defined below, as the depth of that box
may be affected by the delimiters if \delimitershortfall or \delimiterfactor
have non-standard values.
12    \dimen@=\dp\z@
13    \advance\dimen@-\ht\z@
14    \divide \dimen@ by \tw@
15    \advance\dimen@ by\fontdimen22 \textfont\tw@

```

Now lower the alignment and the delimiters into place.

```
16      \lower\dimen@{\hbox{${\left#2\center{\unvbox\z@}\right#4$}}}%
```

End the `\if#1c`

```
17  \fi
```

Now that we have defined `\@arrayleft` and `\@arrayright`, call `\@array`.

```
18  \@array[#1]{#3}
```

```
19 \end{package}
```

## 2.1 newarray.sty

All the features of the old `newarray` style option have been merged into the `array` or `delarray` options.