# The abraces Package

**Arbitrary or asymmetric braces**

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## Contents



## 1 Introduction

The abraces[1] package provides a key-driven interface to suppliment new constructions of the traditional \overbrace and \underbrace pairs.

## 2 User interface

abraces defines two counterparts to the existing braces:

\aoverbrace[⟨*spec*⟩]{⟨*stuff*⟩}

\aunderbrace[⟨*spec*⟩]{⟨*stuff*⟩}

These create an overbrace and underbrace where ⟨*spec*⟩ define a construction pattern based on the elements in Table 1.

The provided interface is based on a ratio-principle, allowing one to put a larger share of "filler" (the horizontal rule) at any location within the brace construction. The traditional \overbrace and \underbrace pairs have a 1:1 share between the left and right side (either side of the tip/cust of the brace). Using a 1:2 ratio would place the brace cusp one third (from the left) into the brace. Similary a 3:2 ratio would place the cusp 40% (or two fifths) from the right edge of the brace.

Other, more complex construction – by means of the optional ⟨*spec*⟩ argument – can also be made by mixing the elements presented in Table 1.

[1] The abraces package: http://ctan.org/pkg/abraces

| ⟨*spec*⟩ character | Output |
|---|---|
| `l` | ⌜ |
| `L` | ⌜ |
| `r` | ⌝ |
| `R` | ⌝ |
| `U` | ⌝⌜ |
| `D` | ⌟⌞ |
| `0` | (single) Empty fill |
| `1`,...,`9` | Copies of regular fill —— |
| `@{`⟨*stuff*⟩`}` | Places ⟨*stuff*⟩ into brace |
| `!{`⟨*len*⟩`}` | Regular fill of length ⟨*len*⟩ |

Table 1: Character specifications ⟨*spec*⟩ used to construct braces.

## 3 Examples

Some examples of the types of braces that can be constructed using `abraces`:

```
\newcommand{\foxanddog}{%
  \textrm{The quick brown fox jumped over the lazy dog}}
```

- `\aoverbrace{\foxanddog}` (traditional `\overbrace`):
  $\overbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aunderbrace{\foxanddog}` (traditional `\underbrace`):
  $\underbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aoverbrace[L3U1R]{\foxanddog}`:
  $\overbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aoverbrace[l1D1r]{\foxanddog}`:
  $\overbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aunderbrace[l2D7r]{\foxanddog}`:
  $\underbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aunderbrace[l1D2U2D1r]{\foxanddog}`:
  $\underbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aoverbrace[L1R]{\foxanddog}`:
  $\overbrace{\text{The quick brown fox jumped over the lazy dog}}$

- `\aunderbrace[L1U3R]{\foxanddog}`:
  $\underbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aunderbrace[l6R0l3D3r0L6r]{\foxanddog}`:
  $\underbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aoverbrace[L501010105U501010105R]{\foxanddog}`:
  $\overbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aunderbrace[l1@{\hspace{5em}}2D2@{\hspace{3em}}1r]{\foxanddog}`:
  $\underbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aunderbrace[l1R@{\color{red!80!white}}L1r]{\foxanddog}`:
  $\underbrace{\text{The quick brown fox jumped over the lazy dog}}$
- `\aoverbrace[L1D!{5em}R]{\foxanddog}`:
  $\overbrace{\text{The quick brown fox jumped over the lazy dog}}$

Your next question might be how to add context to the brace cusps. Here's a possible way to insert text at the appropriate ratio, using the above construction techniques:

$$\overbrace{\text{The quick brown fox jumped over the lazy dog}}^{\text{left}\qquad\qquad\text{right}}$$

```
\newcommand{\bracetext}[1]{%
  \makebox[0pt][c]{\scriptsize#1}}%
\[
  \overbrace[L2U2D1U1R]{\foxanddog}^{%
    \bracescript{L2r@{\bracetext{left}}l2D1r@{\bracetext{right}}l1R}%
    }%
\]
```

## 4 Terms of reference

This package originated from a question on the TeX StackEchange network called Asymmetric overbrace. Some code was taken from the `mathtools`[2] package.

[2]The `mathtools` package: `http://ctan.org/pkg/mathtools`