

The `visualtoks` Package, version 1.0a

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In The `TEX`book, Knuth demonstrates the concept of tokens with the following example:

For example, if the normal conventions of plain `TEX` are in force, the text ‘`{\hskip 36 pt}`’ is converted into a list of eight tokens:

`{`₁ `\hskip` `36`₁₂ `pt`₁₂ ₁₀ `p`₁₁ `t`₁₁ `}`₂

The subscripts here are the category codes, as listed earlier: 1 for “beginning of group,” 12 for “other character,” and so on. The `\hskip` doesn’t get a subscript, because it represents a control sequence token instead of a character token. Notice that the space after `\hskip` does not get into the token list, because it follows a control word. (p. 38)

The same style of token display is used several times in the `TEX`book. It would be useful to be able to generate the display automatically for an arbitrary list of tokens, for pedagogical or debugging purposes. This package provides the `\visualtoks` command which does exactly that.

Usage

Usage: `\visualtoks{<token list>}`.

This package may be used in plain `TEX` or `LATEX` by `\input{visualtoks}`. The ϵ -`TEX` extensions are required for the `\detokenize` primitive.

`<token list>` must be balanced with respect to explicit braces, and must not contain the token `\visualtoks@cycle@nil`. It is assumed that `{` is the only character with category code 1 (beginning of group).

The horizontal separation between displayed tokens may be configured by the dimension register `\visualtokskip`. The default value is 1em.

Samples

- `\visualtoks{\def \macro {abc #1\egroup}}` gives

`\def \macro #6 112 {1 a11 b11 c11 \l10 #6 112 \egroup }2.`

- `\visualtoks{$$\halign{&##\hfil\crrc}$$\par}` gives

`$3 $3 \halign {1 &4 #6 #6 \hfil \crrc }2 $3 $3 \par.`

- Unbalanced `\if... tokens`:

`\visualtoks{\ifnum\iffalse{\fi'} = 0\else}` gives

`\ifnum \iffalse {1 \fi '12 }2 \l10 =12 \l10 012 \else.`

- To demonstrate how \TeX tokenizes consecutive spaces:

`\makeatletter \edef\temp{{\l10}\@spaces}}`

`\expandafter\visualtoks\expandafter{\temp}` gives

`{1 \l10 }2 {1 \l10 \l10 \l10 \l10 }2.`

- To demonstrate the `\lowercase` technique:

`\begingroup`

`\lccode'\l='$ \lccode'a='$ \lccode'?='$ \lccode'~='$ \lccode'#='$`

`\lowercase{\endgroup\def\temp{$$$ a?~}}`

`\expandafter\demotokens\expandafter{\temp}` gives

`$3 $6 $10 $11 $12 $13.`

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Repository

The upstream repository of this package may be found at

<https://github.com/plante3/visualtoks/tree/main>.