ifis-macros

Version 1.0, 7.04.2024

Macros for plain TEX

There are two main macros in the files `ifisinteger.tex` and `ifisdimension.tex`. The macro `\ifisint` tests if a given input string represents a number for TEX. The macro `\ifisdim` does this for dimensions.

Both macros generate errors but hide them from the terminal as they work in `\batchmode`. There is one configuration parameter: `\IIcurrentmode`. The default is `\errorstopmode`. Change this if you call the macros in a different interaction mode so that they can return to this mode.

0. Installation

To use the macro `\ifisint` load via `\input ifisinteger.tex` the file that contains the code. For `\ifisdim` use `\input ifisdimension.tex`.

1. File `ifisinteger.tex`

The main macro is called `\ifisint` and must be used like an `\if`-conditional except that its argument is delimited by `\Boolend`: `\ifisint <argument>\Boolend <true branch>\else <false branch>\fi`.

The implemented algorithm has four steps:

1. 1) Remove signs with or without braces; add sentinel `W`.
   2) Test that the input isn't now `"W`, etc.; otherwise return false.
2. Create a canonical form with a leading zero.
3. 1) Assign the input to a `\count` register inside an `\hbox`.
   2) Test that the box width is the width of the sentinel.
   3) Otherwise return false.
4. 1) Return true if the number isn't TEX's maximum.
   2) Otherwise test if the canonical form is TEX's maximum. If yes, return true.
   3) Otherwise return false.

For more details see my article in TUGboat **45**:1 (2024), 106–109.

2. File `ifisdimension.tex`

The main macro is called `\ifisdim` and must be used like an `\if`-conditional except that its argument is delimited by `\Boolend`: `\ifisdim <argument>\Boolend <true branch>\else <false branch>\fi`.

The implemented algorithm has four steps:

1. 1) Remove signs with or without braces; add sentinel `mm`.
   2) Exclude trivial non-numerics as done in `\ifisint`.
   3) Otherwise return false.
2. 1) Get the integer part.
   2) Get fraction and the unit.
   3) Get the width of the unit.
3. 1) Assign the input to a `\dimen` register inside an `\hbox`.
   2) Test that the box width is the width of the sentinel.
   3) Otherwise return false.
4. 1) Return true if the dimension isn't TEX's `\maxdimen`.
   2) Otherwise test if the coerced sum of the integer part and the fraction expressed in the unit `sp` is `\maxdimen`.
   3) If no, return false.
   4) Otherwise return true.

For more details see my article in TUGboat **45**:1 (2024), 109–112.