The \texttt{magicnum} package

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Abstract

This package allows to access magic numbers by a hierarchical name system.

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1 Documentation

1.1 Introduction

Especially since $\varepsilon$-T\LaTeX{} there are many integer values with special meanings, such as catcodes, group types, ...Package etex, enabled by options, defines macros in the user namespace for these values.

This package goes another approach for storing the names and values.

- If Lua\TeX{} is available, they are stored in Lua tables.
- Without Lua\TeX{} they are remembered using internal macros.

1.2 User interface

The integer values and names are organized in a hierarchical scheme of categories with the property names as leaves. Example: $\varepsilon$-T\TeX{}’s $\texttt{\currentgrouplevel}$ reports 2 for a group caused by $\texttt{\hbox}$. This package has chosen to organize the group types in a main category etex and its subcategory grouptype:

\begin{verbatim}
etex.grouptype.hbox = 2
\end{verbatim}

The property name hbox in category etex.grouptype has value 2. Dots are used to separate components.

If you want to have the value, the access key is constructed by the category with all its components and the property name. For the opposite the value is used instead of the property name.

Values are always integers (including negative numbers).

1.2.1 $\texttt{\magicnum}$

$\texttt{\magicnum}$ expects an access key as argument and expands to the requested data. The macro is always expandable. In case of errors the expansion result is empty.

The same macro is also used for getting a property name. In this case the property name part in the access key is replaced by the value.

The catcodes of the resulting numbers and strings follow T\TeX{}’s tradition of $\texttt{\string}$, $\texttt{\meaning}$, ...: The space has catcode 10 ($\texttt{\tex.catcode.space}$) and the other characters have catcode 12 ($\texttt{\tex.catcode.other}$).

Examples:

\begin{verbatim}
\magicnum{etex.grouptype.hbox} ⇒ 2
\magicnum{\texttt{\tex.catcode.14}} ⇒ comment
\magicnum{\texttt{\tex.catcode.undef}} ⇒ ∅
\end{verbatim}
1.2.2 Properties

- The components of a category are either subcategories or key value pairs, but not both.
- The full specified property names are unique and thus has one integer value exactly.
- Also the values inside a category are unique. This condition is a prerequisite for the reverse mapping of \texttt{magicnum}.
- All names start with a letter. Only letters or digits may follow.

1.3 Data

1.3.1 Category \texttt{tex.catcode}

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{tex.catcode.escape}</td>
<td>0</td>
</tr>
<tr>
<td>\texttt{tex.catcode.begingroup}</td>
<td>1</td>
</tr>
<tr>
<td>\texttt{tex.catcode.endgroup}</td>
<td>2</td>
</tr>
<tr>
<td>\texttt{tex.catcode.math}</td>
<td>3</td>
</tr>
<tr>
<td>\texttt{tex.catcode.align}</td>
<td>4</td>
</tr>
<tr>
<td>\texttt{tex.catcode.eol}</td>
<td>5</td>
</tr>
<tr>
<td>\texttt{tex.catcode.parameter}</td>
<td>6</td>
</tr>
<tr>
<td>\texttt{tex.catcode.superscript}</td>
<td>7</td>
</tr>
<tr>
<td>\texttt{tex.catcode.subscript}</td>
<td>8</td>
</tr>
<tr>
<td>\texttt{tex.catcode.ignore}</td>
<td>9</td>
</tr>
<tr>
<td>\texttt{tex.catcode.space}</td>
<td>10</td>
</tr>
<tr>
<td>\texttt{tex.catcode.letter}</td>
<td>11</td>
</tr>
<tr>
<td>\texttt{tex.catcode.other}</td>
<td>12</td>
</tr>
<tr>
<td>\texttt{tex.catcode.active}</td>
<td>13</td>
</tr>
<tr>
<td>\texttt{tex.catcode.comment}</td>
<td>14</td>
</tr>
<tr>
<td>\texttt{tex.catcode.invalid}</td>
<td>15</td>
</tr>
</tbody>
</table>

1.3.2 Category \texttt{etex.grouptype}

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{etex.grouptype.bottomlevel}</td>
<td>0</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.simple}</td>
<td>1</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.hbox}</td>
<td>2</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.adjustedhbox}</td>
<td>3</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.vbox}</td>
<td>4</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.align}</td>
<td>5</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.noalign}</td>
<td>6</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.output}</td>
<td>8</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.math}</td>
<td>9</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.disc}</td>
<td>10</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.insert}</td>
<td>11</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.vcenter}</td>
<td>12</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.mathchoice}</td>
<td>13</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.semisimple}</td>
<td>14</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.mathshift}</td>
<td>15</td>
</tr>
<tr>
<td>\texttt{etex.grouptype.mathleft}</td>
<td>16</td>
</tr>
</tbody>
</table>
1.3.3 Category \texttt{etex.iftype}

- \texttt{etex.iftype.none} 0
- \texttt{etex.iftype.char} 1
- \texttt{etex.iftype.cat} 2
- \texttt{etex.iftype.num} 3
- \texttt{etex.iftype.dim} 4
- \texttt{etex.iftype.odd} 5
- \texttt{etex.iftype.vmode} 6
- \texttt{etex.iftype.hmode} 7
- \texttt{etex.iftype.mmode} 8
- \texttt{etex.iftype.inner} 9
- \texttt{etex.iftype.void} 10
- \texttt{etex.iftype.hbox} 11
- \texttt{etex.iftype.vbox} 12
- \texttt{etex.iftype.x} 13
- \texttt{etex.iftype.eof} 14
- \texttt{etex.iftype.true} 15
- \texttt{etex.iftype.false} 16
- \texttt{etex.iftype.case} 17
- \texttt{etex.iftype.defined} 18
- \texttt{etex.iftype.csname} 19
- \texttt{etex.iftype.fontchar} 20

1.3.4 Category \texttt{etex.nodetype}

- \texttt{etex.nodetype.none} -1
- \texttt{etex.nodetype.char} 0
- \texttt{etex.nodetype.hlist} 1
- \texttt{etex.nodetype.vlist} 2
- \texttt{etex.nodetype.rule} 3
- \texttt{etex.nodetype.ins} 4
- \texttt{etex.nodetype.mark} 5
- \texttt{etex.nodetype.adjust} 6
- \texttt{etex.nodetype.ligature} 7
- \texttt{etex.nodetype.disc} 8
- \texttt{etex.nodetype.whatsit} 9
- \texttt{etex.nodetype.math} 10
- \texttt{etex.nodetype.glue} 11
- \texttt{etex.nodetype.kern} 12
- \texttt{etex.nodetype.penalty} 13
- \texttt{etex.nodetype.unset} 14
- \texttt{etex.nodetype.maths} 15

1.3.5 Category \texttt{etex.interactionmode}

- \texttt{etex.interactionmode.batch} 0
- \texttt{etex.interactionmode.nonstop} 1
- \texttt{etex.interactionmode.scroll} 2
- \texttt{etex.interactionmode.errorstop} 3

1.3.6 Category \texttt{luatex.pdfliteral.mode}

- \texttt{luatex.pdfliteral.mode.setorigin} 0
- \texttt{luatex.pdfliteral.mode.page} 1
- \texttt{luatex.pdfliteral.mode.direct} 2

2 Implementation
2.1 Reload check and package identification

Reload check, especially if the package is not used with \LaTeX. 

Package identification:
2.2 Catcodes

\begin{verbatim}
\begin{group}
\catcode61=10 \relax
\catcode48=32 \relax
\catcode32=10 \relax
\endgroup
\edef\magicnum@AtEnd{\endinput}
\end{verbatim}

\begin{verbatim}
\catcode61=5 \relax
\endlinechar=13 \relax
\catcode123=1 \relax
\catcode125=2 \relax
\catcode64=11 \relax
\def\x{\endgroup
\expandafter\edef\csname magicnum@AtEnd\endcsname{\endlinechar=\the\endlinechar\relax
\catcode13=\the\catcode13\relax
\catcode32=\the\catcode32\relax
\catcode35=\the\catcode35\relax
\catcode61=\the\catcode61\relax
\catcode64=\the\catcode64\relax
\catcode123=\the\catcode123\relax
\catcode125=\the\catcode125\relax
}}%
\expandafter\x\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \relax
\endlinechar=13 \relax
\catcode123=1 \relax
\catcode125=2 \relax
\catcode64=11 \relax
\def\x{\endgroup
\edef\magicnum@AtEnd{\endlinechar=\the\endlinechar\relax
\catcode13=\the\catcode13\relax
\catcode32=\the\catcode32\relax
\catcode35=\the\catcode35\relax
\catcode61=\the\catcode61\relax
\catcode64=\the\catcode64\relax
\catcode123=\the\catcode123\relax
\catcode125=\the\catcode125\relax
}}%
\expandafter\x\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \relax
\endlinechar=13 \relax
\catcode123=6 \relax
\catcode40=1 \relax
\catcode41=2 \relax
\catcode42=3 \relax
\catcode43=4 \relax
\catcode44=5 \relax
\catcode45=6 \relax
\catcode46=7 \relax
\catcode47=8 \relax
\catcode48=9 \relax
\catcode49=10 \relax
\def\x{\endgroup
\edef\magicnum@AtEnd{\endlinechar=\the\endlinechar\relax
\catcode13=\the\catcode13\relax
\catcode32=\the\catcode32\relax
\catcode35=\the\catcode35\relax
\catcode61=\the\catcode61\relax
\catcode64=\the\catcode64\relax
\catcode123=\the\catcode123\relax
\catcode125=\the\catcode125\relax
}}%
\expandafter\x\catcode61\catcode48\catcode32=10\relax%
\end{verbatim}
2.3 Check for previous definition

\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname newcommand\endcsname\relax
\expandafter\ifx\csname magicnum\endcsname\relax
\else
\input infwarerr.sty\relax
\PackageError{magicnum}{string\magicnum\space is already defined}\@ehc
\fi
\else
\newcommand*{\magicnum}{}
\fi
\endgroup

2.4 Without Lua\TeX{}

\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname directlua\endcsname\relax
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname ifcsname\endcsname\relax
\def\magicnum#1{\expandafter\ifx\csname MG@#1\endcsname\relax
\else\csname MG@#1\endcsname\fi}
\else
\begingroup
\edef\x{\endgroup\def\noexpand\magicnum##1{\expandafter\noexpand\csname
ifcsname\endcsname MG@##1\noexpand\endcsname
\noexpand\csname MG@##1\noexpand\expandafter\noexpand\endcsname
\noexpand\csname fi\endcsname}}
\x
\fi
\else
\begingroup
\edef\x{\endgroup
\def\noexpand\magicnum##1{\expandafter\noexpand\csname
ifcsname\endcsname MG@##1\noexpand\endcsname
\noexpand\csname MG@##1\noexpand\expandafter\noexpand\endcsname
\noexpand\csname fi\endcsname}}
\x
\fi
\else
\begingroup
\edef\x{\endgroup
\def\noexpand\magicnum##1{\expandafter\noexpand\csname
ifcsname\endcsname MG@##1\noexpand\endcsname
\noexpand\csname MG@##1\noexpand\expandafter\noexpand\endcsname
\noexpand\csname fi\endcsname}}
\x
\fi
\endgroup

2.5 With Lua\TeX{}

\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname RequirePackage\endcsname\relax
\input ifluatex.sty\relax\input infwarerr.sty\relax
\else
\RequirePackage{ifluatex}[2010/03/01]\%
\RequirePackage{infwarerr}[2010/04/08]\%
\fi
\endgroup
\magicnum@directlua
\ifnum\luatexversion<36 %
\def\magicnum@directlua{\directlua0 }%
\else
\let\magicnum@directlua\directlua
\fi
\magicnum@directlua()
require("oberdiek.magicnum")%
\def\x{2011/04/10 v1.4} \def\StripPrefix#1>{\expandafter\StripPrefix\meaning\x} \edef\y{\magicnum@directlua{\if oberdiek.magicnum.getversion then \oberdiek.magicnum.getversion()\end\}% \ifx\x\y \else \PackageError{magicnum}{Wrong version of lua module.\MessageBreak Package version: \x\MessageBreak Lua module: \y}@@ehc \fi \endgroup}

\luaescapestring \begingroup \expandafter\ifx\csname luaescapestring\endcsname\relax \directlua{\if tex.enableprimitives then \tex.enableprimitives('magicnum@', {'luaescapestring'})\end\}% \global\let\luaescapestring\magicnum@luaescapestring \fi \expandafter\ifx\csname luaescapestring\endcsname\relax \escapechar=92 \PackageError{magicnum}{Missing \string\luaescapestring}@@ehc \fi \endgroup

\magicnum \def\magicnum#1{\magicnum@directlua{oberdiek.magicnum.get("\luaescapestring(#1)")}\}% \expandafter\magicnum@AtEnd \fi ⟨/𭗉𭖺𭖼𭗄𭖺𭗀 ولو⟩ 2.6 Data 2.6.1 Plain data \texttt{tex.catcode escape = 0 begingroup = 1 endgroup = 2 math = 3 align = 4 eol = 5}
parameter  =  6
superscript =  7
subscript  =  8
ignore     =  9
space      = 10
letter     = 11
other      = 12
active     = 13
comment    = 14
invalid    = 15
etex.grouptype
bottomlevel =  0
simple      =  1
hbox       =  2
adjustedhbox =  3
vbox       =  4
align      =  5
noalign    =  6
output     =  8
math       =  9
disc      = 10
insert     = 11
vcenter   = 12
mathchoice = 13
semisimple = 14
mathshift  = 15
mathleft  = 16
etex.iftype
none       =  0
char      =  1
cat       =  2
num       =  3
dim       =  4
odd       =  5
vmode     =  6
hmode     =  7
mmode     =  8
inner     =  9
void      = 10
hbox      = 11
vbox      = 12
x         = 13
eof       = 14
true      = 15
false     = 16
case      = 17
defined   = 18
csname    = 19
fontchar  = 20
etex.nodetype
none       = -1
char      =  0
hlist     =  1
vlist     =  2
rule      =  3
ins       =  4
mark      =  5
adjust    =  6
ligature  =  7
disc      =  8
whatsit   =  9
math      = 10
\magicnum@add
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname detokenize\endcsname\relax
\def\magicnum@add#1#2#3{%
  \expandafter\magicnum@add
  \csname MG@#1.#2\endcsname
  \csname MG@#1.#3\endcsname
  {#3}{#2}%
}
\def\magicnum@add#1#2#3#4{%
  \def#1{#3}%
  \def#2{#4}%
  \edef#1{%
    \expandafter\strip@prefix\meaning#1%
  }%
  \edef#2{%
    \expandafter\strip@prefix\meaning#2%
  }%
}\expandafter\ifx\csname strip@prefix\endcsname\relax
\def\strip@prefix#1->{}%
\else
\def\magicnum@add#1#2#3{%
  \expandafter\edef\csname MG@#1.#2\endcsname{%
    \detokenize{#3}%
  }%
  \expandafter\edef\csname MG@#1.#3\endcsname{%
    \detokenize{#2}%
  }%
}%
\expandafter\ifx\csname cnsname\endcsname\relax
\def\strip@prefix#1->{}%
\else
\def\magicnum@add#1#2#3{%
  \expandafter\edef\csname MG@#1.#2\endcsname{%
    \detokenize{#3}%
  }%
  \expandafter\edef\csname MG@#1.#3\endcsname{%
    \detokenize{#2}%
  }%
}%
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname detokenize\endcsname\relax
\def\magicnum@add#1#2#3{%
  \expandafter\edef\csname MG@#1.#2\endcsname{%
    \detokenize{#3}%
  }%
  \expandafter\edef\csname MG@#1.#3\endcsname{%
    \detokenize{#2}%
  }%
}%
\def\magicnum@add{tex.catcode}{escape}{0}
\def\magicnum@add{tex.catcode}{begingroup}{1}
\def\magicnum@add{tex.catcode}{endgroup}{2}
\def\magicnum@add{tex.catcode}{math}{3}
\def\magicnum@add{tex.catcode}{align}{4}
\def\magicnum@add{tex.catcode}{eol}{5}
\def\magicnum@add{tex.catcode}{parameter}{6}
\def\magicnum@add{tex.catcode}{superscript}{7}
\def\magicnum@add{tex.catcode}{subscript}{8}
\def\magicnum@add{tex.catcode}{ignore}{9}
\def\magicnum@add{tex.catcode}{space}{10}
2.6.3 Lua module

module("oberdiek.magicnum", package.seeall)

function getversion()
  tex.write("2011/04/10 v1.4")
end

local data = {
  ["tex.catcode"] = {
    [0] = "escape",
    [1] = "begingroup",
    [2] = "endgroup",
    [3] = "math",
    [5] = "eol",
    [6] = "parameter",
    [7] = "superscript",
    [8] = "subscript",
    [9] = "ignore",
    [10] = "space",
    [12] = "other",
    [13] = "active",
    [14] = "comment",
    [15] = "invalid",
    ["active"] = 13,
    ["align"] = 4,
    ["begingroup"] = 1,
    ["comment"] = 14,
    ["endgroup"] = 2,
    ["eol"] = 5,
    ["escape"] = 0,
    ["ignore"] = 9,
    ["invalid"] = 15,
    ["letter"] = 11,
    ["math"] = 3,
    ["other"] = 12,
    ["parameter"] = 6,
    ["space"] = 10,
    ["subscript"] = 8,
    ["superscript"] = 7
  },
  ["etex.grouptype"] = {
    [0] = "bottomlevel",
    [1] = "simple",
    [2] = "hbox",
    [3] = "adjustedhbox",
    [4] = "vbox",
    [5] = "align",
    [6] = "noalign",
    [8] = "output",
    [9] = "math",
    [10] = "disc",
  }
}
[12] = "vcenter",
[13] = "mathchoice",
[14] = "semisimple",
[15] = "mathshift",
[16] = "mathleft",
["adjustedbbox"] = 3,
["align"] = 5,
["bottomlevel"] = 0,
["disc"] = 10,
["hbox"] = 2,
["insert"] = 11,
["math"] = 9,
["mathchoice"] = 13,
["mathleft"] = 16,
["noalign"] = 6,
["output"] = 8,
["semisimple"] = 14,
["simple"] = 1,
["vbox"] = 4,
["vcenter"] = 12
),
["etex.iftype"] = {
[0] = "none",
[1] = "char",
[2] = "cat",
[3] = "num",
[4] = "dim",
[5] = "odd",
[6] = "vmode",
[7] = "hmode",
[8] = "mmode",
[9] = "inner",
[10] = "void",
[12] = "vbox",
[13] = "x",
[14] = "eof",
[15] = "true",
[16] = "false",
[17] = "case",
[18] = "defined",
[19] = "csname",
[20] = "fontchar",
["case"] = 17,
["cat"] = 2,
["char"] = 1,
["csname"] = 19,
["defined"] = 18,
["dim"] = 4,
["eof"] = 14,
["false"] = 16,
["fontchar"] = 20,
["hbox"] = 11,
["hmode"] = 7,
["inner"] = 9,
["mmode"] = 8,
["num"] = 3,
["odd"] = 5,
["true"] = 15,
["vbox"] = 12,
function get(name)
local startpos, endpos, category, entry =
  string.find(name, "^([a-zA-Z0-9\d.]+)\.(.-?[a-zA-Z0-9]+)$")

if not entry then
    return
end
local node = data[category]
if not node then
    return
end
local num = tonumber(entry)
if num then
    value = node[num]
    if not value then
        return
    end
else
    value = node[entry]
    if not value then
        return
    end
    value = "" .. value
end
tex.write(value)
end

3 Test

3.1 Catcode checks for loading

\catcode\{=1 %
\catcode\}=2 %
\catcode\#=6 %
\catcode\@=11 %
\expandafter\ifx\csname count@\endcsname\relax
\countdef\count@=255 %
\fi
\expandafter\ifx\csname @gobble\endcsname\relax
\long\def\@gobble#1{}%
\fi
\expandafter\ifx\csname @firstofone\endcsname\relax
\long\def\@firstofone#1{#1}%
\fi
\expandafter\ifx\csname loop\endcsname\relax
\else
\expandafter\@gobble
\fi
{%
\def\loop#1\repeat{%
\def\body{#1}%
\iterate
}%
\def\iterate{%
\body
\let\next\iterate
\else
\let\next\relax
\fi
\next
}%
\let\repeat=\fi

15
\def\RestoreCatcodes{} \count@=0 
\loop
\edef\RestoreCatcodes{% \RestoreCatcodes \catcode\the\count@=\the\catcode\count@\relax }
\ifnum\count@<255 
\advance\count@ 1 
\repeat
\def\RangeCatcodeInvalid#1#2{% \count@=#1\relax \loop
\catcode\count@=15 
\ifnum\count@<#2\relax
\advance\count@ 1 
\repeat
\def\space{ }
\expandafter\ifx\csname LoadCommand\endcsname\relax
\def\LoadCommand{\input magicnum.sty\relax}\
\fi
\def\Test{% \RangeCatcodeInvalid{0}{47}\
\RangeCatcodeInvalid{58}{64}\
\RangeCatcodeInvalid{91}{96}\
\RangeCatcodeInvalid{123}{255}\
\catcode`@=12 
\catcode`\?=0 
\catcode`\?=14 
\LoadCommand
\RangeCatcodeCheck{0}{36}{15}\
\RangeCatcodeCheck{37}{37}{14}\
\RangeCatcodeCheck{38}{47}{15}\
\RangeCatcodeCheck{48}{57}{12}\
\RangeCatcodeCheck{58}{63}{15}\
\RangeCatcodeCheck{64}{64}{12}\
\RangeCatcodeCheck{65}{90}{11}\
\RangeCatcodeCheck{91}{91}{15}\
\RangeCatcodeCheck{92}{92}{0}\
\RangeCatcodeCheck{93}{96}{15}\
\RangeCatcodeCheck{97}{122}{11}\
\RangeCatcodeCheck{123}{255}{15}\
\RestoreCatcodes
}
3.2 Test data

```latex
\def\Test#1#2{% 
  \edef\result{\magicnum{#1}}% 
  \edef\expect{#2}% 
  \edef\expect{\expandafter\stripprefix\meaning\expect}% 
  \ifx\result\expect
  \else 
    \errmessage{
      Failed: [#1] % hash-ok 
      returns [result] instead of [expect]% 
    }% 
  \fi 
} 
\def\stripprefix#1->{} 
```

```latex
\NeedsTeXFormat{LaTeX2e} 
\documentclass{minimal} 
\usepackage{magicnum}[2011/04/10] 
\usepackage{qstest} 
\IncludeTests{*} 
\LogTests{log}{*}{*} 
\newcommand*{\Test}[2]{\Expect*{\magicnum{#1}}{#2}} 
\begin{qstest}{magicnum}{magicnum} 
\Test{tex.catcode.escape}{0} 
\Test{tex.catcode.invalid}{15} 
\Test{tex.catcode.unknown}{} 
\Test{tex.catcode.0}{escape} 
\Test{etex.iftype.true}{15} 
\Test{etex.iftype.false}{16} 
\Test{etex.iftype.15}{true} 
\Test{etex.iftype.16}{false} 
\Test{etex.nodetype.none}{-1} 
\Test{etex.nodetype.-1}{none} 
\Test{luatex.pdfliteral.mode.direct}{2} 
\Test{luatex.pdfliteral.mode.1}{page} 
\Test{}{} 
\Test{unknown}{} 
\Test{unknown.foo.bar}{} 
\Test{unknown.foo.4}{} 
```

3.3 Small test for init\TeX

\edef\x{\magicnum{tex.catcode.15}}
\edef\y{invalid}
\def\Strip#1>{
\edef\y{\expandafter\Strip\meaning\y}
\ifx\x\y
\immediate\write16{Ok}\
\else
\errmessage{\x<>\y}\
\fi
\csname @@end\endcsname\end

4 Installation

4.1 Download

Package. This package is available on CTAN¹:


Bundle. All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

CTAN:install/macros/latex/contrib/oberdiek.tds.zip

TDS refers to the standard “A Directory Structure for \TeX\ Files” (CTAN:tds/tds.pdf). Directories with \texmf in their name are usually organized this way.

4.2 Bundle installation

Unpacking. Unpack the oberdiek.tds.zip in the TDS tree (also known as \texmf tree) of your choice. Example (linux):

unzip oberdiek.tds.zip -d ~/texmf

Script installation. Check the directory TDS:scripts/oberdiek/ for scripts that need further installation steps. Package attachfile2 comes with the Perl script pdfatfi.pl that should be installed in such a way that it can be called as pdfatfi. Example (linux):

chmod +x scripts/oberdiek/pdfatfi.pl

\cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/

4.3 Package installation

Unpacking. The .dtx file is a self-extracting docstrip archive. The files are extracted by running the .dtx through plain \TeX:

tex magicnum.dtx

¹ftp://ftp.ctan.org/tex-archive/
TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as texmf tree):

- `magicnum.sty` → `tex/generic/oberdiek/magicnum.sty`
- `magicnum.lua` → `scripts/oberdiek/magicnum.lua`
- `oberdiek.magicnum.lua` → `scripts/oberdiek/oberdiek.magicnum.lua`
- `magicnum.pdf` → `doc/latex/oberdiek/magicnum.pdf`
- `magicnum.txt` → `doc/latex/oberdiek/magicnum.txt`
- `test/magicnum-test1.tex` → `doc/latex/oberdiek/test/magicnum-test1.tex`
- `test/magicnum-test2.tex` → `doc/latex/oberdiek/test/magicnum-test2.tex`
- `test/magicnum-test3.tex` → `doc/latex/oberdiek/test/magicnum-test3.tex`
- `test/magicnum-test4.tex` → `doc/latex/oberdiek/test/magicnum-test4.tex`
- `magicnum.dtx` → `source/latex/oberdiek/magicnum.dtx`

If you have a `docstrip.cfg` that configures and enables docstrip’s TDS installing feature, then some files can already be in the right place, see the documentation of docstrip.

### 4.4 Refresh file name databases

If your TeX distribution (teTeX, mikTeX, …) relies on file name databases, you must refresh these. For example, teTeX users run `texhash` or `mktexlsr`.

### 4.5 Some details for the interested

**Attached source.** The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk magicnum.pdf unpack_files output .
```

**Unpacking with LaTeX.** The `.dtx` chooses its action depending on the format:

- **plain TeX:** Run docstrip and extract the files.
- **LaTeX:** Generate the documentation.

If you insist on using LaTeX for docstrip (really, docstrip does not need LaTeX), then inform the autodetect routine about your intention:

```
\let\install=y\input{magicnum.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

**Generating the documentation.** You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdflatex:

```
pdflatex magicnum.dtx
makeindex -s gind.ist magicnum.idx
pdflatex magicnum.dtx
makeindex -s gind.ist magicnum.idx
pdflatex magicnum.dtx
```
5 Catalogue

The following XML file can be used as source for the \TeX\ Catalogue. The elements \texttt{caption} and \texttt{description} are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is \texttt{magicnum.xml}.

```
<entry datestamp='$Date$' modifier='$Author$' id='magicnum'>
  <name>magicnum</name>
  <caption>Access \TeX\ systems' "magic numbers".</caption>
  <authorref id='auth:oberdiek'/>
  <copyright owner='Heiko Oberdiek' year='2007,2009-2011'/>
  <license type='lppl1.3'/>
  <version number='1.4'/>
  <description>
    This package allows access to the various parameter values in \TeX\ (catcode values), \eTeX\ (group, if and node types, and interaction mode), and \LuaTeX\ (pdfliteral mode) by a hierarchical name system.
    
    The package is part of the <xref refid='oberdiek'>oberdiek</xref> bundle.
  </description>
  <documentation details='Package documentation' href='ctan:/macros/latex/contrib/oberdiek/magicnum.pdf'/>
  <ctan file='true' path='/macros/latex/contrib/oberdiek/magicnum.dtx'/>
  <miktex location='oberdiek'/>
  <texlive location='oberdiek'/>
  <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
</entry>
```

6 History

[2007/12/12 v1.0]
- First public version.

[2009/04/10 v1.1]
- Adaptation to \Lua\TeX\ 0.40.

[2010/03/09 v1.2]
- Adaptation to package \luatex\ 0.4.

[2011/03/24 v1.3]
- Catcode fixes.

[2011/04/10 v1.4]
- Compatibility for ini\TeX\.
- Dependency from package \luatex\ removed.
- Version check for lua module.
7  Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; plain numbers refer to the code lines where the entry is used.

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