The **magicnum** package

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Abstract

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

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*Please report any issues at https://github.com/ho-tex/oberdiek/issues
1 Documentation

1.1 Introduction

Especially since \$\varepsilon\$-\TeX\ there are many integer values with special meanings, such as catcodes, group types, ...Package \texttt{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 \texttt{Lua\TeX} is available, they are stored in Lua tables.
- Without \texttt{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\$-\TeX\’s \texttt{\texttt{currentgrouplevel}} reports 2 for a group caused by \texttt{\hbox}. This package has choosen to organize the group types in a main category \texttt{etex} and its subcategory \texttt{grouptype}:

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

The property name \texttt{hbox} in category \texttt{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{\textbackslash magicnum}

\begin{verbatim}
\magicnum \{⟨access key⟩\}
\end{verbatim}

Macro \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 \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{tex.catcode.14} ⇒ comment
\magicnum{tex.catcode.undefined} ⇒ ∅
\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{\string"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>Category</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>Category</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}

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

1.3.4 Category \texttt{etex.nodetype}

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

1.3.5 Category \texttt{etex.interactionmode}

\begin{itemize}
\item \texttt{etex.interactionmode.batch} 0
\item \texttt{etex.interactionmode.nonstop} 1
\item \texttt{etex.interactionmode.scroll} 2
\item \texttt{etex.interactionmode.errorstop} 3
\end{itemize}

1.3.6 Category \texttt{luatex.pdfliteral.mode}

\begin{itemize}
\item \texttt{luatex.pdfliteral.mode.setorigin} 0
\item \texttt{luatex.pdfliteral.mode.page} 1
\item \texttt{luatex.pdfliteral.mode.direct} 2
\end{itemize}

2 Implementation
2.1 Reload check and package identification

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

Package identification:
\section{Catcodes}

\begin{verbatim}
\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \^^M
\endlinechar=13 %
\catcode123=1 % {
\catcode125=2 % }
\catcode64=11 % @
\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
}\}
\x\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \^^M
\endlinechar=13 %
\catcode35=6 % #
\catcode64=11 % @
\catcode123=1 % {
\catcode125=2 % }
\def\PLATFORM\EnsureCode{1}{2}{% 
\edef\magicnum@AtEnd{% 
\magicnum@AtEnd
\catcode#1=\the\catcode#1\relax
\endinput}
\PLATFORM\EnsureCode{34}{12} % *
\PLATFORM\EnsureCode{39}{12} % '
\PLATFORM\EnsureCode{40}{12} % ( 
\PLATFORM\EnsureCode{41}{12} % )
\PLATFORM\EnsureCode{42}{12} % *
\PLATFORM\EnsureCode{44}{12} % ,
\PLATFORM\EnsureCode{45}{12} % -
\PLATFORM\EnsureCode{46}{12} % .
\PLATFORM\EnsureCode{47}{12} % / 
\PLATFORM\EnsureCode{58}{12} % :
\PLATFORM\EnsureCode{60}{12} % <
\PLATFORM\EnsureCode{62}{12} % >
\PLATFORM\EnsureCode{91}{12} % [ 
\PLATFORM\EnsureCode{93}{12} % ]
\edef\magicnum@AtEnd{\magicnum@AtEnd\noexpand\endinput}
\end{verbatim}

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2.3 Check for previous definition

\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname newcommand\endcsname\relax
\else
\input infwarerr.sty\relax
\@PackageError{magicnum}{string\space magicnum\space space is already defined}\@ehc
\fi
\else
\newcommand*{\magicnum}{}\fi
\fi
\endgroup
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname directlua\endcsname\relax
\magicnum
\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\expandafter\noexpand\csname
fi\endcsname}}\x\fi\else
\endgroup\endgroup
\begingroup
\def\magicnum@directlua{\directlua0 }\else
\let\magicnum@directlua\directlua\fi
\magicnum@directlua{require("oberdiek.magicnum")}%
\endgroup
2.4 Without \LaTeX{}

\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
\magicnum@directlua
\ifnum\luatexversion<36 %
\def\magicnum@directlua{\directlua0 }%\else
\let\magicnum@directlua\directlua%\fi
\magicnum@directlua{%
require("oberdiek.magicnum")}%
2.5 With \LaTeX{}

\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifnum\luatexversion<36 %
\def\magicnum@directlua{\directlua0 }%\else
\let\magicnum@directlua\directlua%\fi
\magicnum@directlua{ requer("oberdiek.magicnum")}%

\begin{package}{magicnum}
\def\magicnum#1{% 
  \magicnum@directlua{% 
    oberdiek.magicnum.get("\luaescapestring{#1}")% 
  }% 
}\expandafter\magicnum@AtEnd\fi%
\end{package}

\section*{2.6 Data}

\subsection*{2.6.1 Plain data}
\begin{verbatim}
tex.catcode escape = 0 begingroup = 1 endgroup = 2 math = 3 align = 4 eol = 5
\end{verbatim}
220 parameter = 6
221 superscript = 7
222 subscript = 8
223 ignore = 9
224 space = 10
225 letter = 11
226 other = 12
227 active = 13
228 comment = 14
229 invalid = 15
230 etex.grouptype
231 bottomlevel = 0
232 simple = 1
233 hbox = 2
234 adjustedhbox = 3
235 vbox = 4
236 align = 5
237 noalign = 6
238 output = 8
239 math = 9
240 disc = 10
241 insert = 11
242 vcenter = 12
243 mathchoice = 13
244 semisimple = 14
245 mathshift = 15
246 mathleft = 16
247 etex.iftype
248 none = 0
249 char = 1
250 cat = 2
251 num = 3
252 dim = 4
253 odd = 5
254 vmode = 6
255 hmode = 7
256 mmode = 8
257 inner = 9
258 void = 10
259 hbox = 11
260 vbox = 12
261 x = 13
262 eof = 14
263 true = 15
264 false = 16
265 case = 17
266 defined = 18
267 csname = 19
268 fontchar = 20
269 etex.nodetype
270 none = -1
271 char = 0
272 hlist = 1
273 vlist = 2
274 rule = 3
275 ins = 4
276 mark = 5
277 adjust = 6
278 ligature = 7
279 disc = 8
280 whatsit = 9
281 math = 10
2.6.2 Data for TeX

\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\expandafter\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}}}%
\fi\magicnum@add{tex.catcode}{escape}{0}
\magicnum@add{tex.catcode}{begingroup}{1}
\magicnum@add{tex.catcode}{endgroup}{2}
\magicnum@add{tex.catcode}{math}{3}
\magicnum@add{tex.catcode}{align}{4}
\magicnum@add{tex.catcode}{eol}{5}
\magicnum@add{tex.catcode}{parameter}{6}
\magicnum@add{tex.catcode}{superscript}{7}
\magicnum@add{tex.catcode}{subscript}{8}
\magicnum@add{tex.catcode}{ignore}{9}
\magicnum@add{tex.catcode}{space}{10}
2.6.3 Lua module

```lua
(*lua)
module('oberdiek.magicnum', package.seeall)

function getversion()
  tex.write("2016/05/16 v1.5")
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",
["adjustedhbox"] = 3,
["align"] = 5,
["bottomlevel"] = 0,
["disc"] = 10,
["hbox"] = 2,
["insert"] = 11,
["math"] = 9,
["mathchoice"] = 13,
["mathleft"] = 16,
["mathshift"] = 15,
["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] = "rmode",
[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,
["none"] = 0,
["num"] = 3,
["odd"] = 5,
["true"] = 15,
["vbox"] = 12,
function get(name)
   local startpos, endpos, category, entry =
   string.find(name, "^(%a[%a%d%.%]*).(-?[%a%d]+)$")
   ...

function get(name)
   local startpos, endpos, category, entry =
   string.find(name, "^(%a[%a%d%.%]*).(-?[%a%d]+)$")
   ...

-- Example of how to use the get function
get("vmode") = 6,
get("void") = 10,
get("x") = 13,
}

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

-- Example of etex.interactionmode
["etex.interactionmode"] = {
[0] = "batch",
[1] = "nonstop",
[2] = "scroll",
[3] = "errorstop",
["batch"] = 0,
["errorstop"] = 3,
["nonstop"] = 1,
["scroll"] = 2
}

-- Example of luatex.pdfliteral.mode
["luatex.pdfliteral.mode"] = {
[0] = "setorigin",
[1] = "page",
[2] = "direct",
["direct"] = 2,
["page"] = 1,
["setorigin"] = 0
}

14
if not entry then
    return
end
local node = data[category]
if not node then
    return
end
local num = tonumber(entry)
local value
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
⟨/lua⟩

3 Test

3.1 Catcode checks for loading

\catcode\{=1 \catcode\}=2 \catcode\#=6 \catcode\@=11 \countdef\count@=255 \fi
\long\def\@gobble#1{}\fi
\long\def\@firstofone#1{#1}\else
\let\next\relax\fi
\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\RangeCatcodeCheck#1#2#3{\count@=#1\relax\loop\ifnum#3=\catcode\count@\else\textbf{Character \the\count@ with wrong catcode \the\catcode\count@ instead of \number#3}\fi\ifnum\count@<#2\relax\advance\count@ 1 %\repeat}\def\space{ }\expandafter\ifx\csname LoadCommand\endcsname\relax\def\LoadCommand{\input magicnum.sty}\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

\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->{}  

\NeedsTeXFormat{LaTeX2e}  
\documentclass{minimal}  
\usepackage{magicnum}[2016/05/16]  
\usepackage{qstest}  
\IncludeTests{*}  
\LogTests{log}{*}{*}  
\newcommand*{\Test}{#1}{#2}{}  

\Test{tex.catcode.escape}{0}  
\Test{tex.catcode.invalid}{15}  
\Test{tex.catcode.unknown}{}  
\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}{}  

\end{qstest}  
\end
3.3 Small test for init\TeX

\begin{verbatim}
\catcode`\{=1 \catcode`\}=2 \catcode`\#=6
\input magicnum.sty
\edef\x{\magicnum{\text{catcode.15}}}
\edef\y{invalid}
\def\Strip#1>{\expandafter\Strip\meaning\y}
\ifx\x\y
   \immediate\write16{Ok}\%
\else
   \errormessage{\x<>\y}\%
\fi
\end{verbatim}

4 Installation

4.1 Download

Package. This package is available on CTAN\footnote{http://ctan.org/pkg/magicnum}:

\begin{itemize}
\item \texttt{CTAN:macros/latex/contrib/oberdiek/magicnum.dtx} The source file.
\item \texttt{CTAN:macros/latex/contrib/oberdiek/magicnum.pdf} Documentation.
\end{itemize}

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.

\texttt{CTAN:install/macros/latex/contrib/oberdiek.tds.zip}

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

4.2 Bundle installation

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

\begin{verbatim}
unzip oberdiek.tds.zip -d ~/texmf
\end{verbatim}

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

\begin{verbatim}
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
\end{verbatim}

4.3 Package installation

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

\begin{verbatim}
tex magicnum.dtx
\end{verbatim}
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 T\TeX{} distribution (te\TeX{}, mik\TeX{}, ...) relies on file name databases, you must refresh these. For example, te\TeX{} users run `texhash` or `mktexlsr`.

4.5 Some details for the interested

Unpacking with L\LaTeX{}. The .dtx chooses its action depending on the format:

- **plain Te\TeX{}**: Run docstrip and extract the files.
- **L\LaTeX{}**: Generate the documentation.

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

```
\latex \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 pdfl\LaTeX{}:

```
pdf\latex magicnum.dtx
makeindex -s gind.ist magicnum.idx
pdf\latex magicnum.dtx
makeindex -s gind.ist magicnum.idx
pdf\latex magicnum.dtx
```

5 Catalogue

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

```xml
<catalogue>
<?xml version='1.0' encoding='us-ascii'?>
<!DOCTYPE entry SYSTEM 'catalogue.dtd'>
778 ("catalogue")
779 <!DOCTYPE entry SYSTEM 'catalogue.dtd'>
780 <DOCTYP...>
```

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This package allows access to the various parameter values in TeX (catcode values), eTeX (group, if and node types, and interaction mode), and LuaTeX (pdf literal mode) by a hierarchical name system.

The package is part of the oberdiek bundle.