The pdfescape package

Heiko Oberdiek* <heiko.oberdiek at googlemail.com>

2016/05/16 v1.14

Abstract

This package implements pdfTEX's escape features (\pdfescapehex, \pdfunescapehex, \pdfescapename, \pdfescapestring) using TEX or ε -TEX.

Contents

1	Doc	umentation 2
	1.1	Additional unescape macros
	1.2	Sanitizing macro
2	Imp	lementation 3
	2.1	Reload check and package identification
	2.2	Catcodes
	2.3	Load package
	2.4	Sanitizing
		2.4.1 Space characters
		2.4.2 Space normalization 6
	2.5	\EdefUnescapeName 6
	2.6	\EdefUnescapeString 8
	2.7	User macros (pdfTEX analogues)
	2.8	Help macros
		2.8.1 Characters
		2.8.2 Switch for ε -TeX
	2.9	Conversions
		2.9.1 Conversion to hex string
		2.9.2 Character code to octal number
		2.9.3 Unpack hex string
		2.9.4 Conversion to PDF name
		2.9.5 Conversion to PDF string
3	Test	17
	3.1	Catcode checks for loading
	3.2	Macro tests
	3.3	Test with \pdfescape commands
	3.4	Test without \pdfescape, with ε -TEX
	3.5	Test without \pdfescape and ε -TEX
	3.6	Test with LuaTeX
	3.7	Check/ensure test preconditions
		3.7.1 Check \pdfescape 19
		3.7.2 Check ε -T _E X
		3.7.3 Check LuaT _E X
	3.8	Common part
		3.8.1 Test for iniT _E X

 $^{{\}rm ^*Please\ report\ any\ issues\ at\ https://github.com/ho-tex/oberdiek/issues}$

4	Inst	tallation	28
	4.1	Download	28
	4.2	Bundle installation	2
	4.3	Package installation	2
	4.4	Refresh file name databases	2
	4.5	Some details for the interested	2
5	Cat	calogue	30
6		tory	30
	[200	[7/02/21 v1.0]	3
	[200	[7/02/25 v1.1]	3
	200	[7/03/20 v1.2]	3
		7/04/11 v1.3]	3
		7/04/21 v 1.4]	3
		7/08/27 v1.5]	3
		7/09/09 v1.6]	3
		$7/10/27 \text{ v1.7} \cdot$	3
		7/11/11 v1.8]	3
		0/03/01 v1.9	3
		0/11/12 v1.10]	3
		1/01/30 v1.11]	3
		1/04/04 v1.12]	3
		1/11/25 v1.13]	3
		6/05/16 v1.14]	3
	[201	0,00,10 .1,	J.
7	Ind	ex	3

1 Documentation

```
\EdefEscapeHex \{\langle cmd \rangle\} \{\langle string \rangle\} \EdefUnescapeHex \{\langle cmd \rangle\} \{\langle string \rangle\} \EdefEscapeName \{\langle cmd \rangle\} \{\langle string \rangle\}
```

These commands converts $\langle string \rangle$ and stores the result in macro $\langle cmd \rangle$. The conversion result is the same as the conversion of the corresponding pdfTEX's primitives. Note that the argument $\langle string \rangle$ is expanded before the conversion.

For example, if $pdfT_EX >= 1.30$ is present, then $\ensuremath{\texttt{EdefEscapeHex}}$ becomes to:

```
\def\EdefEscapeHex#1#2{%
  \edef#1{\pdfescapehex{#2}}%
}
```

The package provides implementations for the case that pdfTEX is not present (or too old). Even ε -TEX can be missing, however it is used if it is detected.

Babel. The input strings may contain shorthand characters of package babel.

1.1 Additional unescape macros

```
\EdefUnescapeName \{\langle cmd \rangle\}\ \{\langle string \rangle\}
```

Sequences of a hash sign with two hexadecimal digits are converted to the corresponding character (PDF-1.2). A hash sign that is not followed by two hexadecimal digits is left unchanged. The catcodes in the result string follow TeX's

conventions. The space has catcode 10 (space) and the other characters have catcode 12 (other).

```
\EdefUnescapeString \{\langle cmd \rangle\}\ \{\langle string \rangle\}
```

Macro $\langle cmd \rangle$ stores the unescaped string in $\langle string \rangle$. All the rules for literal strings are implemented, see PDF specification. The catcodes in the result string follow TeX's conventions.

1.2 Sanitizing macro

```
\EdefSanitize \{\langle cmd \rangle\}\ \{\langle string \rangle\}
```

Argument $\langle string \rangle$ is expanded, converted to a string of tokens with catcode 12 (other) and space tokens, and stored in macro $\langle cmd \rangle$.

2 Implementation

1 (*package)

2.1 Reload check and package identification

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

```
{\tt 2 \ begingroup\ catcode 61 \ catcode 48 \ catcode 32 = 10 \ relax\%}
  3 \catcode13=5 % ^^M
     \endlinechar=13 %
  4
     \catcode35=6 % #
  5
     \catcode39=12 % '
     \catcode44=12 % ,
     \catcode45=12 % -
     \catcode46=12 % .
 10
     \catcode58=12 % :
 11
     \catcode64=11 % @
 12
     \catcode123=1 % {
     \catcode125=2 % }
 13
     \expandafter\let\expandafter\x\csname ver@pdfescape.sty\endcsname
 14
     \ifx\x\relax % plain-TeX, first loading
 15
 16
 17
      \def\empty{}%
 18
      \ifx\x\empty % LaTeX, first loading,
        % variable is initialized, but \ProvidesPackage not yet seen
 19
 20
 21
        \expandafter\ifx\csname PackageInfo\endcsname\relax
 22
         \def\x#1#2{\%}
          \immediate\write-1{Package #1 Info: #2.}%
 23
         }%
 24
        \else
 25
 26
         27
        \x{pdfescape}{The package is already loaded}%
 28
        \aftergroup\endinput
 29
 30
     \fi
 31
 32 \endgroup%
Package identification:
 33 \begingroup\catcode61\catcode48\catcode32=10\relax%
 34 \catcode13=5 % ^^M
     \endlinechar=13 %
     \catcode35=6 % #
```

```
37 \catcode39=12 %;
   \catcode40=12 % (
   \catcode41=12 % )
   \catcode44=12 % ,
   \catcode45=12 % -
42
   \catcode46=12 % .
43
   \catcode47=12 % /
   \catcode58=12 %:
44
   \catcode64=11 % @
45
46 \catcode91=12 % [
47 \catcode93=12 % ]
48
   \catcode123=1 % {
   \catcode125=2 % }
49
   \expandafter\ifx\csname ProvidesPackage\endcsname\relax
50
     \def \x #1#2#3[#4]{\endgroup}
51
52
      \immediate\write-1{Package: #3 #4}%
53
      \xdef#1{#4}%
    }%
54
   \else
55
56
     \def\x#1#2[#3]{\endgroup}
57
      #2[{#3}]%
      \ifx#1\@undefined
58
        \xdef#1{#3}%
59
60
      \fi
      \int x#1\
61
62
       \xdef#1{#3}%
      \fi
63
    }%
64
65 \fi
66 \expandafter\x\csname ver@pdfescape.sty\endcsname
67 \ProvidesPackage{pdfescape}%
68 [2016/05/16 v1.14 Implements pdfTeX's escape features (HO)]%
```

2.2 Catcodes

```
69 \begingroup\catcode61\catcode48\catcode32=10\relax%
 70 \catcode13=5 % ^^M
 71 \endlinechar=13 %
 72 \catcode123 1 % {
 73 \catcode125 2 % }
 74 \catcode64 11 %
 75 \def\x{\endgroup
                                \expandafter\edef\csname PE@AtEnd\endcsname{%
 76
                                          \verb|\endlinechar| = \\ \verb|\endlinechar| relax|
 77
                                          \color=\the\color=13\relax
 78
                                          \color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\t
 79
                                          \color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\t
 80
                                          \colored{catcode61=\theta}
 81
 82
                                           \colored{catcode64} \to \colored{catcode64}
                                           \catcode123=\the\catcode123\relax
 83
                                           \catcode125=\the\catcode125\relax
 85
                               }%
 86 }%
 87 \x \catcode61\catcode48\catcode32=10\relax\%
 88 \catcode13=5 % ^^M
 89 \endlinechar=13 %
90 \catcode35=6 \% #
91 \catcode64=11 % @
92 \catcode123=1 % {
93 \catcode125=2 % }
94 \def\TMP@EnsureCode#1#2#3{%
95 \edef\PE@AtEnd{%
```

```
\PE@AtEnd
96
97
     #1#2=\theta1#2\
98
   ጉ%
    #1#2=#3\relax
99
100 }
101 \TMP@EnsureCode\catcode{0}{12}% ^^@
102 \TMP@EnsureCode\catcode{34}{12}% "
103 \TMP@EnsureCode\catcode{36}{3}% $
104 \TMP@EnsureCode\catcode{38}{4}% &
105 \TMP@EnsureCode\catcode{39}{12}%
106 \TMP@EnsureCode\catcode{42}{12}% *
107 \TMP@EnsureCode\catcode{45}{12}% -
108 \TMP@EnsureCode\catcode{46}{12}%.
109 \TMP@EnsureCode\catcode{47}{12}% /
110 \TMP@EnsureCode\catcode{60}{12}% <
111 \TMP@EnsureCode\catcode{62}{12}% >
112 \TMP@EnsureCode\catcode{91}{12}% [
113 \TMP@EnsureCode\catcode{93}{12}%]
114 \TMP@EnsureCode\catcode{94}{7}%
115 \TMP@EnsureCode\catcode{96}{12}%
116 \TMP@EnsureCode\uccode{34}{0}% "
117 \TMP@EnsureCode\uccode{48}{0}% 0
118 \TMP@EnsureCode\uccode{61}{0}% =
119 \edef\PE@AtEnd{\PE@AtEnd\noexpand\endinput}
```

2.3 Load package

```
120 \verb|\begingroup\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafte
121 \expandafter\ifx\csname RequirePackage\endcsname\relax
                          \def\TMP@RequirePackage#1[#2]{%
122
123
                                   \begingroup\expandafter\expandafter\expandafter\endgroup
                                    \expandafter\ifx\csname ver@#1.sty\endcsname\relax
124
                                            \input #1.sty\relax
125
126
                                    ۱fi
127
                         }%
                          \TMP@RequirePackage{ltxcmds}[2010/04/08]%
128
129 \else
                         \RequirePackage{ltxcmds}[2010/04/08]%
131 \fi
```

2.4 Sanitizing

151 \else

\EdefSanitize Macro \EdefSanitize takes #2, entirely converts it to token with catcode 12 (other) and stores the result in macro #1.

```
132 \begingroup\expandafter\expandafter\expandafter\endgroup
133 \expandafter\ifx\csname detokenize\endcsname\relax
134
    \long\def\EdefSanitize#1#2{%
      \begingroup
135
136
        \csname @safe@activestrue\endcsname
137
        \edef#1{#2}%
        \label{lem:perconstruction} $$ \PE@onelevel@sanitize\#1\% $$
138
139
      \expandafter\endgroup
      \expandafter\def\expandafter#1\expandafter{#1}%
140
141
     \begingroup\expandafter\expandafter\expandafter\endgroup
142
     \expandafter\ifx\csname @onelevel@sanitize\endcsname\relax
143
144
      \def\PE@onelevel@sanitize\#1{\%}
145
        \edef#1{\expandafter\PE@strip@prefix\meaning#1}%
146
      }%
147
      \def\PE@strip@prefix#1>{}%
148
      \let\PE@onelevel@sanitize\@onelevel@sanitize
149
    \fi
150
```

```
152 \long\def\EdefSanitize#1#2{%
                               \begingroup
                         153
                                \csname @safe@activestrue\endcsname
                         154
                                 \edef#1{#2}%
                         155
                         156
                               \expandafter\endgroup
                         157
                               \verb|\expandafter\expandafter#1\expandafter{|}|
                         158
                                \detokenize\expandafter{#1}%
                               }%
                         159
                         160 }%
                             \def\PE@onelevel@sanitize\#1{\%}
                         161
                               \ensuremath{\texttt{detokenize}}\ensuremath{\texttt{w1}}%
                         162
                         163 }%
                         164 \fi
          \PE@sanitize Macro \PE@sanitize is only defined for compatibility with version 1.4. Its use is
                        deprecated.
                         165 \let\PE@sanitize\EdefSanitize
                        2.4.1 Space characters
      \PE@space@other
                         166 \begingroup
                         167 \catcode'\ =12\relax%
                         168 \end{group\def\PE@space@other{ }}\x\\
      \PE@space@space
                         169 \def\PE@space@space{ }
                        2.4.2 Space normalization
\PE@SanitizeSpaceOther
                         170 \def\PE@SanitizeSpaceOther#1{\%
                         171 \edef#1{\expandafter\PE@SpaceToOther#1 \relax}%
                         172 }
    \PE@SpaceToOther
                         173 \def\PE@SpaceToOther#1 #2\relax{%
                         174 #1%
                         175 \ifx\\#2\\%
                         176 \else
                               \PE@space@other
                         177
                               \ltx@ReturnAfterFi{%
                         178
                                \PE@SpaceToOther#2\relax
                         179
                              }%
                         180
                         181 \fi
                         182 }
                        2.5
                              \EdefUnescapeName
    \EdefUnescapeName
                         183 \def\EdefUnescapeName#1#2{%
                         184 \EdefSanitize#1{#2}%
                             \verb|\PE@SanitizeSpaceOther#1%| \\
                         185
                             \PE@UnescapeName#1%
                         186
                             \PE@onelevel@sanitize#1%
                         187
                         188 }
    \PE@UnescapeName
                         189 \begingroup
                         190 \catcode'\$=6 % hash
                         191 \catcode'\#=12 % other
```

```
193
                                 \begingroup
                                  \PE@InitUccodeHexDigit
                           194
                                  \def\PE@result{}%
                           195
                           196
                                  \expandafter\PE@DeName$1#\relax\relax
                           197
                                 \expandafter\endgroup
                                 \verb|\expandafter\expandafter$1\expandafter{\PE@result}|
                           198
                           199
                                \gdef\PE@DeName$1#$2$3{\%}
                           200
                                 \ifx\relax$2\%
                           201
                                  \edef\PE@result{\PE@result$1}%
                           202
                           203
                                  \let\PE@next\relax
                           204
                                 \else
                                  \irde{1}ifx\relax$3%
                           205
                                    % wrong escape sequence in input
                           206
                           207
                                    \edef\PE@result{\PE@result$1#}%
                                    \let\PE@next\relax
                           208
                           209
                                  \else
                                    \uppercase{%
                           210
                           211
                                     \def\PEQtestA{$2}\%
                                     \def\PE@testB{$3}%
                           212
                                    }%
                           213
                                    \ifcase\ifcase\expandafter\PE@TestUcHexDigit\PE@testA
                           214
                                          \ifcase\expandafter\PE@TestUcHexDigit\PE@testB
                           215
                           216
                           217
                                          \else
                                            \ltx@one
                           218
                           219
                                          \fi
                           220
                                         \else
                                          \ltx@one
                           221
                                         \fi
                           222
                           223
                                     \uccode\ltx@zero="\PE@testA\PE@testB\relax
                           224
                                     \uppercase{%
                                      \def\PE@temp{^^@}\%
                           225
                                     }%
                           226
                           227
                                     \uccode\ltx@zero=\ltx@zero
                           228
                                     \edef\PE@result{\PE@result$1\PE@temp}%
                           229
                                     \let\PE@next\PE@DeName
                           230
                                    \else
                                     \% wrong escape sequence in input
                           231
                                     \edef\PE@result\PE@result\1#}%
                           232
                                     \def\PE@next{\PE@DeName$2$3}%
                           233
                                    \fi
                           234
                           235
                                  \fi
                           236
                                 \fi
                           237
                                 \PE@next
                               }%
                           239 \endgroup
\PE@InitUccodeHexDigit
                           240 \def\PE@InitUccodeHexDigit{%
                           241 \uccode'a='A\relax
                           242
                               \uccode'b='B\relax
                               \uccode'c='C\relax
                           243
                               \uccode'd='D\relax
                           244
                           245
                               \uccode'e='E\relax
                           246 \uccode'f='F\relax
                           247 \uccode'A=\ltx@zero
                           248
                               \uccode'B=\ltx@zero
                           249
                               \uccode'C=\ltx@zero
                               \uccode'D=\ltx@zero
                           250
                           251
                               \uccode'E=\ltx@zero
                               \uccode'F=\ltx@zero
                           252
```

\gdef\PE@UnescapeName\$1{%

192

```
253 \uccode'0=\ltx@zero
                             \uccode'1=\ltx@zero
                         254
                             \uccode'2=\ltx@zero
                         255
                             \uccode'3=\ltx@zero
                             \uccode'4=\ltx@zero
                         258
                             \uccode'5=\ltx@zero
                             \uccode'6=\ltx@zero
                         260
                             \uccode'7=\ltx@zero
                         261 \uccode'8=\ltx@zero
                         262 \uccode'9=\ltx@zero
                         263 }
   \PE@TestUcHexDigit
                         264 \def\PE@TestUcHexDigit#1{%
                         265 \ifnum'#1<48 % 0
                              \ltx@one
                         266
                             \else
                         267
                               \ifnum'#1>70 % F
                         268
                                \ltx@one
                         269
                         270
                               \else
                         271
                                \ifnum'#1>57 % 9
                         272
                                  \ifnum'#1<65 % A
                         273
                                   \ltx@one
                         274
                                  \else
                         275
                                   \ltx@zero
                                  \fi
                         276
                         277
                                \else
                                 \ltx@zero
                         278
                         279
                                \fi
                         280
                               \fi
                         281
                             \fi
                         282 }
                        2.6
                              \EdefUnescapeString
   \EdefUnescapeString
                         283 \def\EdefUnescapeString#1#2\{\%
                         284 \EdefSanitize#1{#2}%
                         285 \PE@SanitizeSpaceOther#1%
                         286 \PE@NormalizeLineEnd#1%
                         287 \PE@UnescapeString#1%
                         288 \PE@onelevel@sanitize#1%
                         289 }
                         290 \begingroup
                         291 \uccode'\8=10 % lf
                         292 \uccode'\9=13 % cr
                         293 \def\x#1#2{\endgroup}
 \PE@NormalizeLineEnd
                             \def\PE@NormalizeLineEnd##1{%
                         294
                               \def\PE@result{}%
                         295
                         296
                               \expandafter\PE@@NormalizeLineEnd##1#2\relax
                         297
                               \let##1\PE@result
                         298 }%
\PE@@NormalizeLineEnd
                             \def\PE@@NormalizeLineEnd##1#2##2{%
                         299
                               300
                         301
                                \edef\PE@result{\PE@result##1}%
                         302
                                \let\PE@next\relax
                         303
                               \else
```

```
\edef\PE@result{\PE@result##1#1}%
                       304
                               \ifx#1##2% lf
                       305
                                 \let\PE@next\PE@@NormalizeLineEnd
                       306
                       307
                       308
                                 \def\PE@next{\PE@@NormalizeLineEnd##2}%
                       309
                               \fi
                       310
                             \fi
                              \PE@next
                       311
                       312 }%
                       313 }%
                       314 \uppercase{%
                       315 \x 89%
                       316 }
                       317 \begingroup
                       318 \catcode'\|=0 %
                            \color=12 \%
\PE@UnescapeString
                            |gdef|PE@UnescapeString#1{%
                       320
                       321
                              | begingroup
                               |def|PE@result\{\}\%
                       322
                               |expandafter|PE@DeString#1\|relax
                       323
                              |expandafter|endgroup
                       324
                              | \, expandafter \, | \, def \, | \, expandafter \# 1 \, | \, expandafter \{ \, | \, PE@result \} \%
                       325
                       326 }%
      \PE@DeString
                            |gdef|PE@DeString#1\#2{%
                       327
                              |ifx|relax#2%
                       328
                               |edef|PE@result{|PE@result#1}%
                       329
                               |let|PE@next|relax
                       330
                       331
                               |if n#2%
                       332
                                 |uccode|ltx@zero=10 %
                       333
                       334
                               else|if r#2%
                                 |uccode|ltx@zero=13 %
                       335
                               |else|if t#2%
                       336
                       337
                                 |uccode|ltx@zero=9 %
                               |else|if b#2%
                       338
                       339
                                 |uccode|ltx@zero=8 %
                               else|if f#2%
                       340
                                |uccode|ltx@zero=12 %
                       341
                       342
                                 |uccode|ltx@zero=|ltx@zero
                               |fi|fi|fi|fi
                               |ifnum|uccode|ltx@zero>|ltx@zero
                       345
                       346
                                 |uppercase{%
                                  |\texttt{edef}| \texttt{PE@temp} \{ \texttt{^^0} \} \%
                       347
                       348
                                 |edef|PE@result{|PE@result#1|PE@temp}%
                       349
                                 |let|PE@next|PE@DeString
                       350
                       351
                               else
                                 |if\#2% backslash
                       352
                                  |edef|PE@result{|PE@result#1}%
                       353
                       354
                                  |let|PE@next|PE@CheckEndBackslash
                       355
                                 else
                       356
                                  |ifnum'#2=10 % linefeed
                       357
                                    |edef|PE@result{|PE@result#1}%
                                    |let|PE@next|PE@DeString
                       358
                                  else
                       359
                                    |ifcase|PE@TestOctDigit#2%
                       360
                                     |edef|PE@result{|PE@result#1}%
                       361
```

```
|def|PE@next{|PE@OctI#2}%
                         362
                                     else
                         363
                                      |edef|PE@result{|PE@result#1#2}%
                         364
                         365
                                      |let|PE@next|PE@DeString
                         366
                                     |fi
                         367
                                   |fi
                         368
                                  |fi
                         369
                                Ιfi
                              |fi
                         370
                               |PE@next
                         371
                         372 }%
\PE@CheckEndBackslash
                             |gdef|PE@CheckEndBackslash#1{%
                         373
                         374
                              |ifx|relax#1%
                         375
                               else
                         376
                                |edef|PE@result{|PE@result\}%
                         377
                                 |expandafter|PE@DeString|expandafter#1%
                               |fi
                         379 }%
                         380 | endgroup
      \PE@TestOctDigit
                         381 \def\PE@TestOctDigit#1{%
                         382 \ifnum'#1<48 % 0
                         383
                              \ltx@one
                         384 \else
                               \ifnum'#1>55 % 7
                         385
                                \ltx@one
                         386
                         387
                               \else
                                \ltx@zero
                         388
                         389
                               \fi
                         390 \fi
                         391 }
             \PE@OctI
                         392 \def\PE@OctI#1#2{%
                         393 \ifcase\PE@TestOctDigit#2%
                              \def\PE@next{\PE@OctII{#1#2}}%
                             \def\PE@next{\PE@OctAll#1#2}%
                         396
                         397 \fi
                         398 \PE@next
                         399 }
             \PE@OctII
                         400 \def\PE@OctII#1#2{%
                         401 \ifcase\PE@TestOctDigit#2%
                         402
                              \def\PE@next{\PE@OctIII#1#2}%
                         403 \else
                              \def\PE@next{\PE@OctAll{#1}#2}%
                         404
                         405 \fi
                         406 \PE@next
                         407 }
                         408 \operatorname{ltxQIfUndefined{numexpr}}{\%}
                         409 \catcode'\$=9 %
                         410 \catcode'\&=14 %
                         411 }{%
                         412 \catcode'\$=14 %
                         413 \catcode'\&=9 %
                         414 }
```

```
\PE@OctIII
                                                                         415 \def\PE@OctIII#1#2#3{%
                                                                         416 \ifnum#1<4 %
                                                                                           \def\PE@next{\PE@OctAll{#1#2#3}}%
                                                                          417
                                                                          418 \else
                                                                         419 $ \count\ltx@cclv#1 %
                                                                         420 $ \advance\count\ltx@cclv -4 %
                                                                                                \edef\PE@next{%
                                                                          421
                                                                          422
                                                                                                     \noexpand\PE@OctAll{%
                                                                          423 $
                                                                                                           \the\count\ltx@cclv
                                                                          424 &
                                                                                                             425
                                                                                                           #2#3%
                                                                          426
                                                                                                     }%
                                                                          427
                                                                                               }%
                                                                          428 \fi
                                                                          429 \PE@next
                                                                          430 }
                     \PE@OctAll
                                                                          431 \def\PE@OctAll#1{%
                                                                          432 \uccode\ltx@zero='#1\relax
                                                                                          \uppercase{%
                                                                          434
                                                                                             \edef\PE@result{\PE@result^^@}%
                                                                          435 }%
                                                                          436 \PE@DeString
                                                                         437 }
                                                                                               User macros (pdfTFX analogues)
                                                                       2.7
                                                                          438 \verb|\degingroup\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafte
                                                                          439 \expandafter\ifx\csname RequirePackage\endcsname\relax
                                                                          440
                                                                                          \def\TMP@RequirePackage#1[#2]{%
                                                                                                 \begingroup\expandafter\expandafter\expandafter\endgroup
                                                                          441
                                                                                                 \expandafter\ifx\csname ver@#1.sty\endcsname\relax
                                                                          442
                                                                          443
                                                                                                     \input #1.sty\relax
                                                                                                \fi
                                                                          444
                                                                          445 }%
                                                                         446 \quad \texttt{TMP@RequirePackage\{pdftexcmds\}[2007/11/11]\%}
                                                                          447 \else
                                                                         448 \quad \texttt{RequirePackage\{pdftexcmds\}[2007/11/11]\%}
                                                                         449 \fi
                                                                          450 \begingroup\expandafter\expandafter\expandafter\endgroup
                                                                          451 \expandafter\ifx\csname pdf@escapehex\endcsname\relax
        \EdefEscapeHex
                                                                          452 \long\def\EdefEscapeHex#1#2\{\%
                                                                                                \texttt{EdefSanitize}#1{#2}%
                                                                          453
                                                                                                \PE@SanitizeSpaceOther#1%
                                                                          454
                                                                          455
                                                                                               \PE@EscapeHex#1%
                                                                          456 }%
\EdefUnescapeHex
                                                                                           \def\EdefUnescapeHex#1#2{%
                                                                          457
                                                                                                \texttt{EdefSanitize}#1{#2}%
                                                                          458
                                                                                                \PE@UnescapeHex#1%
                                                                          459
                                                                          460 }%
 \EdefEscapeName
                                                                          461
                                                                                           \label{longdef} $$ \end{temp} \end{temp} $$ \end{temp} $
                                                                                                \texttt{EdefSanitize}#1{#2}%
                                                                          462
                                                                                                \PE@SanitizeSpaceOther#1%
                                                                          463
                                                                                               \PE@EscapeName#1%
                                                                          464
                                                                          465 }%
```

```
\EdefEscapeString
                       \long\def\EdefEscapeString#1#2{%
                   466
                        \EdefSanitize#1{#2}%
                   467
                        \PE@SanitizeSpaceOther#1%
                   468
                   469
                        \PE@EscapeString#1%
                   470 }%
                   471 \else
   \PE@edefbabel Help macro that adds support for babel's shorthand characters.
                   472 \logdef\PEQedefbabel#1#2#3{\%}
                   473
                        \begingroup
                   474
                          \csname @save@activestrue\endcsname
                   475
                          \edef#1{#2{#3}}%
                   476
                        \expandafter\endgroup
                         \verb|\expandafter\def| expandafter #1 expandafter {#1} %
                   478 }%
 \EdefEscapeHex
                   479
                       \long\def\EdefEscapeHex#1#2{%
                   480
                        \PE@edefbabel#1\pdf@escapehex{#2}%
\EdefUnescapeHex
                   482 \def\EdefUnescapeHex#1#2{%
                       \PE@edefbabel#1\pdf@unescapehex{#2}%
                   483
                   484 }%
\EdefEscapeName
                      \long\def\EdefEscapeName#1#2{%
                   485
                       \PE@edefbabel#1\pdf@escapename{#2}%
                   486
                   487 }%
\EdefEscapeString
                       \long\def\EdefEscapeString#1#2{%
                        \PE@edefbabel#1\pdf@escapestring{#2}%
                   490
                      }%
                   491 \expandafter\PE@AtEnd
                   492 \fi%
                        Help macros
                  2.8
                  2.8.1 Characters
                  Special characters with catcode 12 (other) are created and stored in macros.
       \PE@hash
                   493 \edef\PE@hash{\string#}
   \PE@backslash
                   494 \begingroup
                   495 \escapechar=-1 %
                   496 \edef\x{\endgroup
                   497 \def\noexpand\PE@backslash{\string\\}%
                   498 }
                   499 \x
```

```
2.8.2 Switch for \varepsilon-T<sub>E</sub>X
```

```
500 \ltx@newif\ifPE@etex
501 \begingroup\expandafter\expandafter\expandafter\endgroup
502 \expandafter\ifx\csname numexpr\endcsname\relax
503 \else
504 \PE@etextrue
505 \fi
```

2.9Conversions

549 }

2.9.1 Conversion to hex string

```
\PE@EscapeHex
```

```
506 \ifPE@etex
                                                507 \def\PE@EscapeHex#1{%
                                                                  \edef#1{\expandafter\PE@ToHex#1\relax}%
                                                508
                                                509 }%
                                                510 \else
                                                511 \def\PE@EscapeHex#1{%
                                                512
                                                                 \def\PE@result{}%
                                                                  \expandafter\PE@ToHex#1\relax
                                                513
                                                                  \let#1\PE@result
                                                514
                                                515 }%
                                                516 \fi
      \PE@ToHex
                                                517 \def\PE@ToHex#1{%
                                                518 \ifx\relax#1%
                                                519 \else
                                                                \PE@HexChar{#1}%
                                                             \expandafter\PE@ToHex
                                                 522 \fi
                                                 523 }%
\PE@HexChar
                                                524 \ \text{ifPE@etex}
                                                525 \def\PE@HexChar#1{%
                                                                  \label{lem:pedexproblem} $$ \PEQHexDigit{\sum_{numexpr\dimexpr.0625\dim expr'\#1sp\leq x}relax} $$
                                                526
                                                                  \PE@HexDigit{%
                                                527
                                                                      \normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\normalfont{\nor
                                                 528
                                                529
                                                                  }%
                                                530 }%
                                                531 \else
                                                532 \def\PE@HexChar#1{%
                                                 533
                                                                  \dimen0='#1sp%
                                                                   \dimen2=.0625\dimen0 %
                                                 534
                                                                   \advance\dimen0-16\dimen2 %
                                                 535
                                                 536
                                                                  \edef\PE@result{%
                                                                      \PE@result
                                                537
                                                                       \PE@HexDigit{\dimen2}%
                                                 538
                                                                      \PE@HexDigit{\dimen0 }%
                                                539
                                                              }%
                                                540
                                                541 }%
                                                542 \fi
\PE@HexDigit
                                                 543 \ensuremath{ \ensuremath{ \mbox{ }}} 143 \ensuremath{ \mbox{ \mbox{ }}} 14\%
                                                 544 \expandafter\string
                                                 545 \ifcase#1%
                                                              0\or 1\or 2\or 3\or 4\or 5\or 6\or 7\or 8\or 9\or
                                                546
                                                                 A\or B\or C\or D\or E\or F%
                                                547
                                                548 \fi
```

2.9.2 Character code to octal number

```
\PE@OctChar
```

```
550 \ifPE@etex
551 \def\PE@OctChar#1{%
     \expandafter\PE@@OctChar
552
        \verb|\the\numexpr\dimexpr.015625\dimexpr'#1sp\relax\relax|
553
          \expandafter\relax
554
        \expandafter\relax
555
        \the\numexpr\dimexpr.125\dimexpr'#1sp\relax\relax\relax
556
557
        \relax
        #1%
558
   }%
559
    560
     \PE@backslash
561
     #1%
562
     <text>
563
     \the\numexpr\dimexpr'\#3sp\relax-8*\#2\relax
564
565 }%
566 \else
567 \def\PE@OctChar#1{%
     \dimen0='#1sp%
568
     \dimen2=.125\dimen0 %
569
570
     \dimen4=.125\dimen2 %
     \advance\dimen0-8\dimen2 %
571
     \advance\dimen2-8\dimen4 %
572
     \edef\PE@result{%
573
      \PE@result
574
      \PE@backslash
575
      \number\dimen4 %
576
577
      \number\dimen2 %
      \number\dimen0 %
578
579
     }%
580 }%
581 \fi
```

2.9.3 Unpack hex string

\PE@UnescapeHex

```
582 \def\PE@UnescapeHex#1{%
583 \begingroup
584 \PE@InitUccodeHexDigit
585 \def\PE@result{}%
586 \expandafter\PE@DeHex#1\relax\relax
587 \expandafter\endgroup
588 \expandafter\def\expandafter#1\expandafter{\PE@result}%
589 }
```

\PE@DeHex

```
590 \def\PE@DeHex#1#2{%
591 \ifx#2\relax
     \int x#1 \, dx
592
       \let\PE@next\relax
593
594
595
       \uppercase{%
        \def\PE@testA{#1}%
596
       }%
597
       \ifcase\expandafter\PE@TestUcHexDigit\PE@testA
598
        \def\PE@next{%
599
600
         \PE@DeHex#10\relax\relax
601
        ት%
602
       \else
```

```
\let\PE@next\relax
  603
  604
                   \fi
  605
               \else
  606
  607
                    \uppercase{%
  608
                       \def\PEQtestA{\#1}\%
  609
                       \def\PE@testB{#2}%
  610
                   }%
                    \ifcase\expandafter\PE@TestUcHexDigit\PE@testA
  611
                       \ifcase\expandafter\PE@TestUcHexDigit\PE@testB
  612
                           \uccode\ltx@zero="\PE@testA\PE@testB\relax
  613
                           \ifnum\uccode\ltx@zero=32 %
  614
                               \let\PE@temp\PE@space@space
  615
  616
                           \else
  617
                               \uppercase{%
                                   \def\PE@temp{^^@}\%
  618
                               }%
  619
  620
                           \fi
                           \edef\PE@result{\PE@result\PE@temp}%
  621
                           \let\PE@next\PE@DeHex
  622
  623
                           % invalid input sequence
  624
                           \def\PE@next{%
  625
                               \PE@DeHex#1%
  626
  627
  628
                       \fi
  629
                    \else
                       \% invalid input sequence
  630
  631
                       \def\PE@next{\PE@DeHex#2}%
                   \fi
  632
               \fi
  633
  634
               \PE@next
 635 }
2.9.4 Conversion to PDF name
  636 \ifPE@etex
  637
              \def\PE@EscapeName#1{%
                   \verb|\eff| 1{\exp and after} PE@EscapeNameTokens#1\relax} % $$ $ \eff| 1{\exp and after} PE@EscapeNameTokens#1\rela
  638
  639 }%
  640 \else
  641 \def\PE@EscapeName#1{\%
                  642
                   \expandafter\PE@EscapeNameTokens#1\relax
  643
                   \let#1\PE@result
  644
  645 }%
  646 \fi
  647 \ensuremath{ \ens\#1}
  648 \ifx\relax#1%
              \else
  649
                   \ifnum'#1<33 %
  650
                       \ifcase'#1 %
  651
                           % drop illegal zero
  652
  653
                           \PE@EscapeNameAdd\PE@hash
  654
                           \PE@HexChar#1%
  655
                       \fi
  656
                   \else
  657
                       \ifnum'#1>126 %
  658
```

\PE@EscapeName

\PE@EscapeNameTokens

```
\PE@EscapeNameAdd\PE@hash
                                                           659
                                                                               \PE@HexChar#1%
                                                           660
                                                                            \else \ifnum'#1=35 \PE@EscapeNameHashChar 23% #
                                                           661
                                                                               \else\ifnum'#1=37 \PE@EscapeNameHashChar 25% %
                                                           662
                                                                               663
                                                                               \else\ifnum'#1=41 \PE@EscapeNameHashChar 29%)
                                                           664
                                                                               \else\ifnum'#1=47 \PE@EscapeNameHashChar 2F% /
                                                           665
                                                                               \else\ifnum'#1=60 \PE@EscapeNameHashChar 3C% <
                                                           666
                                                                               \label{lem:else-life} $$ \left( PE@EscapeNameHashChar 3E\% > \right) $$
                                                           667
                                                                               \else\ifnum'#1=91 \PE@EscapeNameHashChar 5B% [
                                                           668
                                                                               669
                                                           670
                                                                               \else\ifnum'#1=123 \PE@EscapeNameHashChar 7B% {
                                                                               \else\ifnum'#1=125 \PE@EscapeNameHashChar 7D% }
                                                           671
                                                           672
                                                                                  \PE@EscapeNameAdd{#1}%
                                                           673
                                                           674
                                                                               \f(h/h/h/h/h/h/h/h/h/h)
                                                           675
                                                                            \fi
                                                           676
                                                                         \fi
                                                                         \expandafter\PE@EscapeNameTokens
                                                           677
                                                           678
                                                                     \fi
                                                           679 }%
                                                           680 \def\PE@EscapeNameHashChar#1#2{%
                                                                    \PE@EscapeNameAdd{\PE@hash\string#1\string#2}%
                                                           681
                                                           682 }%
      \PE@EscapeNameAdd
                                                           683 \ifPE@etex
                                                           684 \def\PE@EscapeNameAdd#1{#1}%
                                                           685 \else
                                                                     \def\PE@EscapeNameAdd#1{%
                                                           686
                                                                         \edef\PE@result{%
                                                           687
                                                                            \PE@result
                                                           688
                                                           689
                                                                            #1%
                                                           690
                                                                        7%
                                                           691 }%
                                                          692 \fi
                                                         2.9.5
                                                                         Conversion to PDF string
              \PE@EscapeString
                                                           693 \ifPE@etex
                                                           694 \def\PE@EscapeString#1{%
                                                                        \verb|\eff| 1{\exp and after} PE@EscapeStringTokens#1\relax} % $$ $$ \eff| 1{\exp and after} PE@EscapeStringTokens#1\relax} % $$ \eff| 1{\exp and after} PE@Escap
                                                           695
                                                           696 }%
                                                           697 \else
                                                                     \def\PE@EscapeString#1{%
                                                           698
                                                           699
                                                                        \begingroup
                                                                            \def\PE@result{}\%
                                                           700
                                                                            \expandafter\PE@EscapeStringTokens#1\relax
                                                           701
                                                                         \expandafter\endgroup
                                                           702
                                                                         \end{after} $$ \operatorname{\operatorname{Lexpandafter}} \end{after} $$ \operatorname{\operatorname{Lexpandafter}} $$
                                                           703
                                                           704 }%
                                                           705 \fi
\PE@EscapeStringTokens
                                                           706 \def\PE@EscapeStringTokens#1{%
                                                                     \ifx\relax#1\%
                                                           707
                                                                     \else
                                                           708
                                                                        \ifnum'#1<33 %
                                                           709
                                                                            \PE@OctChar#1%
                                                           710
                                                           711
                                                                            \ifnum'#1>126 %
                                                           712
```

```
\PE@OctChar#1%
                        713
                               \else \ifnum'#1=40 \PE@EscapeStringAdd{\string\()% (
                        714
                                 \else\ifnum'#1=41 \PE@EscapeStringAdd{\string\)}%)
                        715
                                 \else\ifnum'#1=92 \PE@EscapeStringAdd{\string\\}% \
                        716
                        717
                        718
                                  \PE@EscapeStringAdd{#1}%
                        719
                                 \fi\fi\fi
                        720
                               \fi
                        721
                              \verb|\expandafter| PE@EscapeStringTokens|
                        722
                        723 \fi
                        724 }%
\PE@EscapeStringAdd
                        725 \ifPE@etex
                        726 \def\PE@EscapeStringAdd#1{#1}%
                        727 \else
                           \def\PE@EscapeStringAdd#1{%
                        728
                              \edef\PE@result{%
                        729
                               \PE@result
                        730
                               #1%
                        731
                        732
                             }%
                        733 }%
                        734 \fi
                        735 \PE@AtEnd%
                        736 (/package)
```

3 Test

3.1 Catcode checks for loading

```
737 (*test1)
738 \catcode'\{=1 %
739 \catcode'\}=2 %
740 \catcode'\#=6 %
741 \catcode'\@=11 %
742 \expandafter\ifx\csname count@\endcsname\relax
743 \countdef\count@=255 %
745 \expandafter\ifx\csname @gobble\endcsname\relax
746 \long\def\@gobble#1{}%
747 \fi
748 \expandafter\ifx\csname Qfirstofone\endcsname\relax
749 \long\def\@firstofone#1{#1}%
750 \fi
751 \expandafter\ifx\csname loop\endcsname\relax
752 \expandafter\@firstofone
753 \else
754 \expandafter\@gobble
755 \fi
756 {%
    \def\loop#1\repeat{%
757
758
      \def\body{#1}%
      \iterate
759
760 }%
    \def\iterate{%
761
762
      \body
       \let\next\iterate
763
      \else
764
       \let\next\relax
765
```

```
\fi
766
767
      \next
    }%
768
    \let\repeat=\fi
769
770 }%
771 \def\RestoreCatcodes{}
772 \count@=0 %
773 \loop
    \edef\RestoreCatcodes{%
774
     \RestoreCatcodes
775
      \catcode\the\count@=\the\catcode\count@\relax
776
777
778 \ifnum\count@<255 %
    \advance\count@ 1 %
780 \repeat
781
782 \def\RangeCatcodeInvalid#1#2{\%
    \count@=#1\relax
783
    \loop
784
785
      \catcode\count@=15 %
    \index(0) = \frac{2}{r}
786
     \advance\count@ 1 %
787
    \repeat
788
789 }
790 \def\RangeCatcodeCheck#1#2#3{%
    \count@=#1\relax
792
    \loop
793
     \ifnum#3=\catcode\count@
794
      \else
795
       \errmessage{%
        Character \the\count@\space
796
797
        with wrong catcode \the\catcode\count@\space
798
        instead of \number#3%
       }%
799
     \fi
800
    \index(0) = \frac{2}{r}
801
     \advance\count@ 1 %
803
    \repeat
804 }
805 \def\space{ }
806 \verb|\expandafter\ifx\csname\ LoadCommand\endcsname\relax|
807
    \def\LoadCommand{\input pdfescape.sty\relax}%
808 \fi
809 \def\Test{%
810
    \RangeCatcodeInvalid{0}{47}%
811
    \RangeCatcodeInvalid{58}{64}%
    \RangeCatcodeInvalid{91}{96}%
    \RangeCatcodeInvalid{123}{255}\%
814
    \catcode'\@=12 %
    \color=0 \%
815
    \color=14 \%
816
    \LoadCommand
817
    \RangeCatcodeCheck{0}{36}{15}%
818
    \RangeCatcodeCheck{37}{37}{14}%
819
820
    \RangeCatcodeCheck{38}{47}{15}%
821
    \RangeCatcodeCheck{48}{57}{12}%
822
    \RangeCatcodeCheck{58}{63}{15}%
823
    \RangeCatcodeCheck{64}{64}{12}%
RangeCatcodeCheck{65}{90}{11}
825
    \RangeCatcodeCheck{91}{91}{15}%
    \RangeCatcodeCheck{92}{92}{0}\%
826
    \RangeCatcodeCheck{93}{96}{15}%
```

```
\RangeCatcodeCheck{97}{122}{11}%
828
     \RangeCatcodeCheck{123}{255}{15}%
829
     \RestoreCatcodes
830
831 }
832 \Test
833 \csname @@end\endcsname
834 \end
835 (/test1)
    Macro tests
3.2
836 (*test2 j test3 j test4 j test5)
837 \NeedsTeXFormat{LaTeX2e}
838 \makeatletter
3.3
      Test with \pdfescape... commands
840 \ProvidesFile{pdfescape-test2.tex}%
       [2016/05/16 v1.14 Test with \string\pdfescape... commands]%
842 (/test2)
      Test without \pdfescape..., with \varepsilon-T<sub>E</sub>X
3.4
843 (*test3)
844 \ProvidesFile{pdfescape-test3.tex}%
      [2016/05/16 v1.14 Test without \string\pdfescape..., with e-TeX]%
845
846 (/test3)
      Test without \pdfescape... and \varepsilon-TeX
3.5
847 (*test4)
848 \ProvidesFile{pdfescape-test4.tex}%
      [2016/05/16 v1.14 Test without \string\pdfescape... and e-TeX]%
850 (/test4)
     Test with LuaT<sub>E</sub>X
3.6
851 (*test5)
852 \ProvidesFile{pdfescape-test5.tex}%
      [2016/05/16 v1.14 Test with LuaTeX]%
854 (/test5)
      Check/ensure test preconditions
3.7.1 Check \pdfescape...
855 (*test2)
856 \@ifundefined{pdfescapehex}{%
857 \PackageError{pdfescape-test2}{%
      Missing \string\pdfescape... commands%
859 }{Test aborted.}%
860 \stop
861 }{}
862 (/test2)
863 (*test3 i test4)
864 \let\pdfescapehex\@undefined
865 \let\pdfunescapehex\@undefined
866 \let\pdfescapename\@undefined
867 \let\pdfescapestring\@undefined
868 (/test3 j test4)
3.7.2 Check \varepsilon-T<sub>E</sub>X
869 (*test3)
870 \@ifundefined{numexpr}{%
```

871 \PackageError{pdfescape-test3}{%

```
872 Missing \eTeX
873 }{Test aborted.}%
874 \stop
875 }{}
876 \/test3\/
```

Package qstest uses ε -T_EX, thus ε -T_EX's features can only be disabled later during loading of package pdfescape.

3.7.3 Check LuaT_EX

```
877 (*test5)
878 \@ifundefined{directlua}{%
879 \PackageError{pdfescape-test5}{%
880 Missing LuaTeX%
881 }{Test aborted.}%
882 \stop
883 }{}
884 \/test5\
```

3.8 Common part

The files for testing uses the framework, provided by the new package qstest of David Kastrup.

```
885 \RequirePackage{qstest}
886 \IncludeTests{*}
887 \LogTests{log}{*}{*}
888
889 \newcommand*{\ExpectVar}[2]{%
    \ifx#1#2%
890
891
    \else
892
     \begingroup
       \@onelevel@sanitize#1%
893
894
       \@onelevel@sanitize#2%
895
       typeout{[#1] <> [#2]}% hash-ok
896
     \endgroup
897
    \Expect*{\ifx#1#2true\else false\fi}{true}%
899 }
900
901 \makeatletter
902 \begingroup
903 \gdef\AllBytes{}%
    \count@=0 %
904
    \catcode0=12 %
905
906
    \@whilenum\count@<256 \do{%
907
     \lccode0=\count@
908
      \ifnum\count@=32 %
909
       \xdef\AllBytes{\AllBytes\space}%
910
      \else
       \lowercase{\%}
911
912
        \xdef\AllBytes{\AllBytes^^@}%
913
     \fi
914
      \advance\count@ by 1 %
915
916 }%
917 \endgroup
918 \newcommand*{\AllBytesHex}{%
919 000102030405060708090A0B0C0D0E0F%
920 101112131415161718191A1B1C1D1E1F%
921 202122232425262728292A2B2C2D2E2F%
922 303132333435363738393A3B3C3D3E3F%
923 404142434445464748494A4B4C4D4E4F%
924 505152535455565758595A5B5C5D5E5F%
925 606162636465666768696A6B6C6D6E6F%
```

```
926 707172737475767778797A7B7C7D7E7F%
927
    808182838485868788898A8B8C8D8E8F%
    909192939495969798999A9B9C9D9E9F%
928
    A0A1A2A3A4A5A6A7A8A9AAABACADAEAF%
    B0B1B2B3B4B5B6B7B8B9BABBBCBDBEBF%
    C0C1C2C3C4C5C6C7C8C9CACBCCCDCECF%
931
    D0D1D2D3D4D5D6D7D8D9DADBDCDDDEDF%
932
    E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF%
   F0F1F2F3F4F5F6F7F8F9FAFBFCFDFEFF%
934
935 }
936 \@onelevel@sanitize\AllBytesHex
937 \expandafter\lowercase\expandafter{%
    \expandafter\newcommand\expandafter*\expandafter\AllBytesHexLC
938
      \expandafter{\AllBytesHex}%
939
940 }
941 \newcommand*{\AllBytesName}{}
942 \begingroup
   \catcode'\#=12 %
943
    \xdef\AllBvtesName{%
944
945
     #01#02#03#04#05#06#07#08#09#0A#0B#0C#0D#0E#0F%
     #10#11#12#13#14#15#16#17#18#19#1A#1B#1C#1D#1E#1F%
946
     #20!"#23$#25&'#28#29*+,-.#2F%
947
     0123456789:;#3C=#3E?%
948
949
     @ABCDEFGHIJKLMNO%
     PQRSTUVWXYZ#5B\@backslashchar#5D^_%
950
951
     'abcdefghijklmno%
952
     pqrstuvwxyz#7B|#7D\string~#7F%
953
     #80#81#82#83#84#85#86#87#88#89#8A#8B#8C#8D#8E#8F%
     \#90\#91\#92\#93\#94\#95\#96\#97\#98\#99\#9A\#9B\#9C\#9D\#9E\#9F\%
954
955
    #A0#A1#A2#A3#A4#A5#A6#A7#A8#A9#AA#AB#AC#AD#AE#AF%
     #B0#B1#B2#B3#B4#B5#B6#B7#B8#B9#BA#BB#BC#BD#BE#BF%
956
    #C0#C1#C2#C3#C4#C5#C6#C7#C8#C9#CA#CB#CC#CD#CE#CF%
957
958
    #D0#D1#D2#D3#D4#D5#D6#D7#D8#D9#DA#DB#DC#DD#DE#DF%
959
     #E0#E1#E2#E3#E4#E5#E6#E7#E8#E9#EA#EB#EC#ED#EE#EF%
     #F0#F1#F2#F3#F4#F5#F6#F7#F8#F9#FA#FB#FC#FD#FE#FF%
960
961 }%
963 \@onelevel@sanitize\AllBytesName
964
965 \newcommand*{\AllBytesString}{}
966 \begingroup
967 \def\|{|}%
   \edef\%{\@percentchar}%
968
969
    \color=0 \%
970
    \catcode'\#=12 %
971
    \catcode'\~=12 %
    \colored{catcode'}=12 \%
    |xdef|AllBytesString{%
973
     \000\001\002\003\004\005\006\007\010\011\012\013\014\015\016\017%
974
975
     \020\021\022\023\024\025\026\027\030\031\032\033\034\035\036\037%
     \040!"#$|%&'\(\)*+,-./%
976
977
     0123456789::<=>?%
     @ABCDEFGHIJKLMNO%
978
     PQRSTUVWXYZ[\\]^_%
979
980
     'abcdefghijklmno%
981
     pqrstuvwxyz{||}~\177%
982
     \200\201\202\203\204\205\206\207\210\211\212\213\214\215\216\217%
983
     \220\221\222\223\224\225\226\227\230\231\232\233\234\235\236\237%
984
     \240\241\242\243\244\245\246\247\250\251\252\253\254\255\256\257%
985
     \260\261\262\263\264\265\266\267\270\271\272\273\274\275\276\277%
     \300\301\302\303\304\305\306\307\310\311\312\313\314\315\316\317%
986
     \320\321\322\323\324\325\326\327\330\331\332\333\334\335\336\337%
987
```

```
\340\341\342\343\344\345\346\347\350\351\352\353\354\355\356\357%
 988
       \360\361\362\363\364\365\366\367\370\371\372\373\374\375\376\377%
 989
990 }%
991 | endgroup
 992 \@onelevel@sanitize\AllBytesString
993
 994 (*test4)
995 \let\org@detokenize\detokenize
996 \let\detokenize\@undefined
997 \let\org@numexpr\numexpr
998 \let\numexpr\@undefined
999 (/test4)
1000 \RequirePackage{pdfescape}
1001 (*test4)
1002 \let\detokenize\org@detokenize
1003 \let\numexpr\org@numexpr
1004 (/test4)
1005
1006 \begin{qstest}{all-hex}{\AllBytes, escapehex}
1007 \EdefEscapeHex\x{\AllBytes}%
1008 \Expect*{\x}*{\AllBytesHex}%
1009 \ExpectVar\x\AllBytesHex
1010 \end{qstest}
1011
1012 \begin{qstest}{all-unhex}{\AllBytesHex, unescapehex}
1013 \EdefUnescapeHex\x{\AllBytesHex}%
1014 \Expect*{\x}*{\AllBytes}%
1015 \ExpectVar\x\AllBytes
1016 \end{qstest}
1017
1018 \begin{qstest}{all-unhex-lc}{\AllBytesHexLC, unescapehex, lowercase}
1019 \EdefUnescapeHex\x{\AllBytesHexLC}%
1020 \Expect*{\x}*{\AllBytes}%
1021 \ExpectVar\x\AllBytes
1022 \end{qstest}
1023
1024 \begin{qstest}{unhex-incomplete}{unescapehex, incomplete}
1026 \Expect*{\x}{@}%
1027 \end{qstest}
1028
1029 \begin{qstest}{unhex-space}{unescapehex, space}
1030 \EdefUnescapeHex\x{20}%
1031 \Expect*{\x}{}%
1032 \ExpectVar\x\space
1033 \end{qstest}
1034
1035 \begin{qstest}{unhex-spaces}{unescapehex, spaces}
1036 \EdefUnescapeHex\x\{204020204120\}\%
1037 \def\y#1{%
      \left(\frac{\pi}{z}{\#1\right} \ \mathbb{Q}^{1} \right)
1038
1039 }\y{}%
1040 \Expect*{\x}*{\z}%
1041 \ \text{ExpectVar} \ x \ z
1042 \end{qstest}
1043
1044 \begin{qstest}{unhex-hash}{unescapehex, hash}
1045 \catcode'\#=12 %
1046 \EdefUnescapeHex\x{#20}%
1047 \ExpectVar\x\space
1048 \end{qstest}
1049
```

```
1050 \begin{qstest}{unhex-invalid}{unescapehex, invalid}
1051 \def\test#1#2{%
                 \EdefUnescapeHex\x{\#1}\%
1052
                 \left( \frac{\#2}{\%} \right)
1053
1054
                 \@onelevel@sanitize\y
1055
                 \ExpectVar\x\y
1056 }%
1057 (*test2)
             \ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath}\amb}\amb}\amb}}}}}}}}}}}}}}
1058
             \edef\y{\string @}%
1059
            \inf x \setminus x \setminus y
1060
            \else
1061
                 \def~{\space}%
1062
                 \typeout{*********************************
1063
                 \typeout{* Your pdfTeX contains bug 777.~~~*}%
1064
1065
                 \typeout{* This test is redefined as dummy, *}%
1066
                 \typeout{* because it triggers the bug.~~~*}%
                 \typeout{********************************
1067
                 \def \text{1#2{}}\%
1068
1069 \fi
1070~\langle/\text{test2}\rangle
1071 \text{ } \text{test}{X}{}}
1072 \test{XY}{}%
1073 \test{XYZ}{}%
            \test{A}{^^a0}%
\begin{array}{ccc} 1075 & \text{$\setminus AX}^{a0}\% \\ 1076 & \text{$\setminus XA}^{a0}\% \\ \end{array}
1077 \test{XXAXX}{^^a0}%
1078 \end{qstest}
1079
1080 \begin{qstest}{all-name}{\AllBytes, escapename}
1081
            \EdefEscapeName\x{\AllBytes}%
1082 \Expect*{\x}*{\AllBytesName}%
1083 \ExpectVar\x\AllBytesName
1084 \end{qstest}
1085
1086 \begin{qstest}{all-string}{\AllBytes, escapestring}
1087 \EdefEscapeString\x{\AllBytes}%
1088 \Expect*{\x}*{\AllBytesString}%
1089 \ExpectVar\x\AllBytesString
1090 \end{qstest}
1091
1092 \begin{qstest}{uchexdigit}{unescape, uppercase hex digit}
1093 \catcode'\@=11 %
1094
             \catcode0=12 %
1095
             \def \text{1#2}
1096
                 \uccode0=#1\relax
1097
                 \uppercase{%
                    \def\x{^^@}
1098
1099
                 }%
                 \texttt{Expect*} 
1100
                      \c \ensuremath{\mathsf{VFQTestUcHexDigit}}\
1101
                         true%
1102
1103
                      \else
1104
                         false%
1105
                      \fi
1106
                }{#2}%
1107
1108
             \def\range#1#2#3{%
                 \count0=\#1\relax
1109
                 \loop
1110
                 \  \in \count0<\#2\relax
1111
```

```
\text{test}(\text{count0}{\#3}\%
1112
         \advance\count0 by 1 %
1113
1114
       \repeat
1115
1116
     \rge{0}{47}{false}%
1117
     \range{48}{57}{true}%
     \arrange{58}{64}{false}\%
1118
1119
     \range{65}{70}{true}%
1120 \range{71}{255}{false}%
1121 \end{qstest}
1122
1123 \begin{qstest}{unescapename}{unescapename}
     \def\test#1#2{%
1124
       \EdefUnescapeName\x{\#1}\%
1125
       \left( \frac{\#2}{\%} \right)
1126
1127
       \@onelevel@sanitize\y
1128
       \ExpectVar\x\y
1129 }%
1130 \catcode'\#=12 %
1131 \catcode0=12 %
1132 \test{}{}%
1133 \test{x}{x}%
     \text{test}\{xy\}\{xy\}\%
1134
1135
     \test{#}{#}%
     \test{##}{##}%
1136
1137
     \test{###}{###}%
1138
     \test{####}{####}%
1139
     \text{test}\{\#x\}\{\#x\}\%
1140
     \test{#xy}{#xy}%
1141 \text{test}\{\#1\}\{\#1\}\%
1142 \test{#40}{@}%
1143 \test{#400}{@0}%
1144 \test{#4x0}{#4x0}%
1145 \test{#ab}{^^ab}%
1146 \text{ } \text{test} \{ \#00 \} \{ ^0 \} \%
1147 \text{test}\{x\#40y\#40z\}\{x@y@z\}\%
1148 \test{#40#40#40#40}{@@@@}%
1149 \text{test}\{a\#x\}\{a\#x\}\%
1150 \text{test}\{a\#xy}\{a\#xy}\%
1151 \test{a#1}{a#1}%
1152 \test{a#40}{a@}%
1153 \test{a#400}{a@0}%
     \test{#20}{}%
1154
1155
     \text{test}\{a\#20\}\{a\}\%
1156
     \text{test}\{a\#20b\}\{a\ b\}\%
1157
     \test{a#20#20#20b}{a \space\space b}%
1158 \end{qstest}
1159
1160 \begin{qstest}{unescapestring}{unescapestring}
     1161
       \EdefUnescapeString\x{#1}\%
1162
1163
       \left( \frac{y}{\#2} \right)
       \@onelevel@sanitize\y
1164
1165
       \ExpectVar\x\y
1166 }%
1167
     \color=12 \%
1168
     \def\DefChar#1#2{\%}
1169
       \begingroup
1170
        \uccode0=#2\relax
1171
       \uppercase{\endgroup
        \def#1{^^@}%
1172
1173
       }%
```

- 1174 }%
- 1175 \DefChar\nul{0}%
- 1176 \DefChar\one{1}%
- 1177 \DefChar\bel{8}%
- 1178 \DefChar\tab{9}%
- 1179 \DefChar\lf{10}%
- 1180 \DefChar\ff{12}%
- 1181 \DefChar\cr{13}%
- 1182 \DefChar\\{92}%
- 1183 \test{}{}%
- 1184 \test{a}{a}%
- 1185 \test{\\}{}%
- 1186 \test{\\\\}{\\}%
- 1187 \test{\\\y}{\\y}%
- 1188 1 \test{\\000}{\nul}%
- 1189 \test{\\b}{\bel}%
- 1190 \test{\\t}{\tab}%
- 1191 \test{\\n}{\lf}%
- 1192 \test{\\f}{\ff}%
- 1193 $\text{test}(\r){\cr}$ %
- 1194 \test{\\(}{(}%
- 1195 \test{\\)}{)}%
- 1196 \test{\\040}{}%
- 1197 \test{\\100}{@}%
- 1198 \test{\\40}{ }%
- 1199 \test{\\1}{\one}%
- 1199 (test(((1)((one)))
- 1200 \test{\\01}{\one}%
- 1201 \test{\\001}{\one}%
- 1202 \test{\\18}{\one8}% 1203 \test{\\018}{\one8}%
- 1203 \test{\\018}{\one8}% 1204 \test{\\0018}{\one8}%
- 1205 \test{x\\}{x}%
- $1206 \quad \texttt{\{x}}$
- 1207 \test{x\\\y}{x\\y}%
- 1208 $\text{test}\{x\000\}\{x\nul}\%$
- 1209 $\text{test}\{x\b\}\{x\b\}$
- 1210 \test{x\\t}{x\tab}%
- 1211 $\text{test}\{x\n\}\{x\lf\}\%$
- 1212 \test{x\\f}{x\ff}%
 1213 \test{x\\r}{x\cr}%
- 1214 \test{x\\(){x(}\%
- 1215 \test{x\\)}{x)}%
- 1216 \test{x\\040}{x}%
- $1217 \text{ } \text{test}\{x\100\}\{x@\}\%$
- 1218 $\text{test}\{x\40\}\{x\}\%$
- 1219 $\text{test}\{x\1\}\{x\one\}\%$
- 1220 \test{x\\01}{x\one}%
- 1221 $\text{test}\{x\001}\{x\0\}$
- 1222 $\text{test}\{x\18}\{x\one8\}\%$
- 1223 \test{x\\018}{x\one8}%
- 1224 $\text{test}\{x\0018\}\{x\0ex 8\}\%$
- 1226 \bel\tab\lf\ff\cr()\\nul\space
- 1227 }%
- 1228 \test{\\\lf}{}%
- 1229 $\text{test}\{x\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\}$
- 1230 $\text{cr}{\l}$
- 1231 $\text{cr}f}{\line(1f)}%$
- 1232 $\text{lf}{\l}$
- $1233 \quad \texttt{\lf\r}{\f}$
- 1234 $\text{test}\{x\cr}\{x\lf}\%$
- 1235 $\text{test}\{x\cr\f}\{x\f\}$

```
1236 \text{ } \text{test}{x\lf}{x\lf}\%
     \t x\left(x\left(x\right)\left(x\right)\right)
1237
1238 \text{test}{x}\
1239 %
1240 \test{\\409}{ 9}%
1241 \test{\\800}{800}%
1242 \text{ } \text{1242} 
1243 \test{\\578}{/8}\%
1244 \text{ } \text{test}{\477}{?}\%
1245 \text{ } \text{1245} \text{ } \text{?^ff}\%
1246 \text{ } \text{test} \text{ } \text{?^77} \text{?^ff} 
1248 \end{qstest}
1249 \stop
1250 \langle / \text{test2 j test3 j test4 j test5} \rangle
3.8.1 Test for iniT<sub>E</sub>X
1251 (*test6)
1252 \input pdfescape.sty\relax
1253 \catcode'\{=1 %
1254 \catcode'\}=2 %
1255 \catcode'\#=6 %
1256 \catcode'\^=7 %
1257 \catcode'\@=11 %
1258 \begingroup
1259 \catcode'\@=11 %
1260 \countdef\count@=255 %
1261 \def\space{}%
1262 \long\def\@whilenum#1\do #2{%
1263
      \ifnum #1\relax
        \#2\relax
1264
        \ensuremath{\verb|@iwhilenum{#1\relax#2\relax}}\%
1265
       \fi
1266
1267 }%
     1268
1269
       \ifnum #1%
1270
        \expandafter\@iwhilenum
1271
1272
        \expandafter\ltx@gobble
1273
       \fi
       {#1}%
1274
1275 }%
     \gdef\AllBytes{}%
1276
      \count@=0 %
1277
     \catcode0=12 %
1278
     \@whilenum\count@<256 \do{%
1279
       \lccode0=\count@
1280
       \ifnum\count@=32 %
1281
         \xdef\AllBytes{\AllBytes\space}%
1282
1283
1284
         \lowercase{%
1285
          \xdef\AllBytes{\AllBytes^^@}%
1286
        }%
       \fi
1287
       \advance\count@ by 1 %
1288
1289 }%
1290 \endgroup
1291 \def\AllBytesHex{%
1292 000102030405060708090A0B0C0D0E0F%
```

1293 101112131415161718191A1B1C1D1E1F% 1294 202122232425262728292A2B2C2D2E2F%

```
303132333435363738393A3B3C3D3E3F%
1295
    404142434445464748494A4B4C4D4E4F%
1296
1297
    505152535455565758595A5B5C5D5E5F%
    606162636465666768696A6B6C6D6E6F%
    707172737475767778797A7B7C7D7E7F%
    808182838485868788898A8B8C8D8E8F%
1300
1301 909192939495969798999A9B9C9D9E9F%
1302
    A0A1A2A3A4A5A6A7A8A9AAABACADAEAF%
1303 B0B1B2B3B4B5B6B7B8B9BABBBCBDBEBF%
1304 C0C1C2C3C4C5C6C7C8C9CACBCCCDCECF%
1305 D0D1D2D3D4D5D6D7D8D9DADBDCDDDEDF%
1306 E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF%
1307
    F0F1F2F3F4F5F6F7F8F9FAFBFCFDFEFF%
1308 }
1309 \ltx@onelevel@sanitize\AllBytesHex
1310 \expandafter\lowercase\expandafter{%
    \expandafter\def\expandafter\AllBytesHexLC
       \expandafter{\AllBytesHex}%
1312
1313 }
1314 \begingroup
    \color=12 \%
1315
    \xdef\AllBytesName{%
1316
      #01#02#03#04#05#06#07#08#09#0A#0B#0C#0D#0E#0F%
1317
1318
      #10#11#12#13#14#15#16#17#18#19#1A#1B#1C#1D#1E#1F%
      #20!"#23$#25&'#28#29*+,-.#2F%
1319
      0123456789:;#3C=#3E?%
1320
1321
      @ABCDEFGHIJKLMNO%
      {\tt PQRSTUVWXYZ\#5B\ltx@backslashchar\#5D^{-}\%}
1322
1323
      'abcdefghijklmno%
      pqrstuvwxyz#7B|#7D\string~#7F%
1324
      #80#81#82#83#84#85#86#87#88#89#8A#8B#8C#8D#8E#8F%
1325
      #90#91#92#93#94#95#96#97#98#99#9A#9B#9C#9D#9E#9F%
1326
1327
     #A0#A1#A2#A3#A4#A5#A6#A7#A8#A9#AA#AB#AC#AD#AE#AF%
1328
     #B0#B1#B2#B3#B4#B5#B6#B7#B8#B9#BA#BB#BC#BD#BE#BF%
     #C0#C1#C2#C3#C4#C5#C6#C7#C8#C9#CA#CB#CC#CD#CE#CF%
1329
1330
     #D0#D1#D2#D3#D4#D5#D6#D7#D8#D9#DA#DB#DC#DD#DE#DF%
1331
      #E0#E1#E2#E3#E4#E5#E6#E7#E8#E9#EA#EB#EC#ED#EE#EF%
1332
      #F0#F1#F2#F3#F4#F5#F6#F7#F8#F9#FA#FB#FC#FD#FE#FF%
1333 }%
1334 \endgroup
1335 \ltx@onelevel@sanitize\AllBytesName
1336 \edef\AllBytesFromName{\expandafter\ltx@gobble\AllBytes}
1337
1338 \begingroup
1339
    \def\|{|}%
1340
    \edef\%{\ltx@percentchar}%
1341
    \colored{catcode'} = 0 \%
    \catcode'\#=12 %
1342
1343 \catcode'\~=12 %
1344
    \catcode'\\=12 %
    |xdef|AllBytesString{%
1345
      \000\001\002\003\004\005\006\007\010\011\012\013\014\015\016\017%
1346
      \020\021\022\023\024\025\026\027\030\031\032\033\034\035\036\037%
1347
      \040!"#$|%&'\(\)*+,-./%
1348
1349
      0123456789:;<=>?%
1350
      @ABCDEFGHIJKLMNO%
1351
      PQRSTUVWXYZ[\\]^_%
1352
      'abcdefghijklmno%
1353
      pqrstuvwxyz{||}~\177%
      \200\201\202\203\204\205\206\207\210\211\212\213\214\215\216\217%
1354
      \220\221\222\223\224\225\226\227\230\231\232\233\234\235\236\237\%
1355
      \240\241\242\243\244\245\246\247\250\251\252\253\254\255\256\257%
1356
```

```
\260\261\262\263\264\265\266\267\270\271\272\273\274\275\276\277%
1357
       \300\301\302\303\304\305\306\307\310\311\312\313\314\315\316\317%
1358
       \320\321\322\323\324\325\326\327\330\331\332\333\334\335\336\337%
1359
       \340\341\342\343\344\345\346\347\350\351\352\353\354\355\356\357%
1360
       \360\361\362\363\364\365\366\367\370\371\372\373\374\375\376\377%
1361
1362
     }%
1363 | endgroup
1364 \ltx@onelevel@sanitize\AllBytesString
1365 \def\msg#{\immediate\write16}
1366 \def\Test#1#2#3{%
1367
     \begingroup
       #1\TestResult{#2}%
1368
1369
      \ifx\TestResult#3%
1370
        \newlinechar=10 %
1371
        \msg{Expect:^^J#3}%
1372
        \msg{Result:^^J\TestResult}%
1373
        \ensuremath{\verb||} \texttt{-string#1-> string#3}\%
1374
1375
       \fi
1376
     \endgroup
1377 }
1378 \Test\EdefEscapeHex\AllBytes\AllBytesHex
1379 \Test\EdefUnescapeHex\AllBytesHex\AllBytes
1380 \Test\EdefEscapeName\AllBytes\AllBytesName
1381 \Test\EdefUnescapeName\AllBytesName\AllBytesFromName
1382 \Test\EdefEscapeString\AllBytes\AllBytesString
1383 \Test\EdefUnescapeString\AllBytesString\AllBytes
1384 \csname @@end\endcsname\end
1385 (/test6)
```

4 Installation

4.1 Download

Package. This package is available on CTAN¹:

CTAN:macros/latex/contrib/oberdiek/pdfescape.dtx The source file.

CTAN:macros/latex/contrib/oberdiek/pdfescape.pdf Documentation.

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

¹http://ctan.org/pkg/pdfescape

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 T_FX:

```
tex pdfescape.dtx
```

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as texmf tree):

```
\begin{array}{ll} pdfescape.sty & \rightarrow tex/generic/oberdiek/pdfescape.sty \\ pdfescape.pdf & \rightarrow doc/latex/oberdiek/pdfescape.pdf \\ test/pdfescape-test1.tex & \rightarrow doc/latex/oberdiek/test/pdfescape-test1.tex \\ test/pdfescape-test2.tex & \rightarrow doc/latex/oberdiek/test/pdfescape-test2.tex \\ test/pdfescape-test3.tex & \rightarrow doc/latex/oberdiek/test/pdfescape-test3.tex \\ test/pdfescape-test4.tex & \rightarrow doc/latex/oberdiek/test/pdfescape-test4.tex \\ test/pdfescape-test5.tex & \rightarrow doc/latex/oberdiek/test/pdfescape-test5.tex \\ test/pdfescape-test6.tex & \rightarrow doc/latex/oberdiek/test/pdfescape-test6.tex \\ pdfescape.dtx & \rightarrow source/latex/oberdiek/pdfescape.dtx \\ \end{array}
```

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

Unpacking with IATEX. 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:

```
latex \let\install=y\input{pdfescape.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 pdfIATEX:

```
pdflatex pdfescape.dtx
makeindex -s gind.ist pdfescape.idx
pdflatex pdfescape.dtx
makeindex -s gind.ist pdfescape.idx
pdflatex pdfescape.dtx
```

5 Catalogue

The following XML file can be used as source for the 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 pdfescape.xml.

```
1386 (*catalogue)
1387 <?xml version='1.0' encoding='us-ascii'?>
1388 <!DOCTYPE entry SYSTEM 'catalogue.dtd'>
1389 <entry datestamp='$Date$' modifier='$Author$' id='pdfescape'>
1390 <name>pdfescape</name>
1391 <caption>Implements pdfTeX's escape features using TeX or e-TeX.</caption>
1392 <authorref id='auth:oberdiek'/>
1393 <copyright owner='Heiko Oberdiek' year='2007,2010,2011'/>
1394 clicense type='lppl1.3'/>
1395 <version number='1.14'/>
1396 <description>
      This package implements xref refid='pdftex'>pdfTeX's
1397
       escape features (<tt>\pdfescapehex</tt>, <tt>\pdfunescapehex</tt>,
1398
       <tt>\pdfescapename</tt>, <tt>\pdfescapestring</tt>) using TeX or
1399
       e-TeX.
1400
1401
       1402
       The package is part of the <xref refid='oberdiek'>oberdiek</xref>
1403
      bundle.
1404
     </description>
1405 <documentation details='Package documentation'
1406
        href='ctan:/macros/latex/contrib/oberdiek/pdfescape.pdf'/>
1407 <ctan file='true' path='/macros/latex/contrib/oberdiek/pdfescape.dtx'/>
1408 <miktex location='oberdiek'/>
1409 <texlive location='oberdiek'/>
1410 <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
1411 </entry>
1412 (/catalogue)
```

6 History

[2007/02/21 v1.0]

• First version.

[2007/02/25 v1.1]

- Test files added.
- \EdefUnescapeHex supports lowercase letters.
- Fix: \EdefEscapeName{^^@}
- Fix: \EdefEscapeName{\string#}
- Fix for \EdefUnescapeHex in case of incomplete hex string.
- Fix: \EdefUnescapeHex generates space tokens with catcode 10 (space) in all cases.
- Fix: \EdefEscapeHex and \EdefEscapeName now generate tokens with catcode 12 (other) only.

[2007/03/20 v1.2]

Fix: Wrong year in \ProvidesPackage.

[2007/04/11 v1.3]

• Line ends sanitized.

[2007/04/21 v1.4]

• \EdefUnescapeName and \EdefUnescapeString added.

[2007/08/27 v1.5]

• \EdefSanitize added (replaces \PE@sanitize).

[2007/09/09 v1.6]

• Fix in catcode setup.

[2007/10/27 v1.7]

• More efficient \EdefSanitize.

[2007/11/11 v1.8]

• Use of package pdftexcmds for LuaT_FX support.

[2010/03/01 v1.9]

• Compatibility with iniTEX.

[2010/11/12 v1.10]

- Use of package ltxcmds.
- Fix for compatibility with iniTeX.

[2011/01/30 v1.11]

• Already loaded package files are not input in plain TEX.

[2011/04/04 v1.12]

- Further fixes for compatibility for iniTeX.
- Test file for iniTeX added.

[2011/11/25 v1.13]

• Higher order bit of octal sequences in **\EdefUnescapeString** ignored according to the PDF specification (Bug found by Bruno Le Floch).

[2016/05/16 v1.14]

• Documentation updates.

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.

```
Symbols 970, 1045, 1130, 1255, 1315, 1342 \# . . . . . . . 191, 327, 352, 740, 943,
```

\\$ 190, 409, 412	\AllBytesName 941, 944, 963,
\% 816, 968, 1340	1082, 1083, 1316, 1335, 1380, 1381
\&	\AllBytesString 965,
\(992, 1088, 1089, 1364, 1382, 1383
\)	
\@ 741, 814, 1093, 1257, 1259	В
\@backslashchar 950	\begin 1006, 1012,
	1018, 1024, 1029, 1035, 1044,
\@firstofone	1050, 1080, 1086, 1092, 1123, 1160
\@gobble 746, 754	
\@ifundefined 856, 870, 878	\bel 1177, 1189, 1209, 1226
\@iwhilenum 1265, 1268, 1270	\body 758, 762
$\ensuremath{$\setminus$}$ @onelevel@sanitize 149, 893,	
894, 936, 963, 992, 1054, 1127, 1164	C
\@percentchar 968	\catcode
\@undefined	3, 5, 6, 7, 8, 9, 10, 11, 12, 13,
58, 864, 865, 866, 867, 996, 998	33, 34, 36, 37, 38, 39, 40, 41, 42,
\@whilenum 906, 1262, 1279	43, 44, 45, 46, 47, 48, 49, 69, 70,
	72, 73, 74, 78, 79, 80, 81, 82, 83,
	84, 87, 88, 90, 91, 92, 93, 101,
1182, 1185, 1186, 1187, 1188,	102, 103, 104, 105, 106, 107,
1189, 1190, 1191, 1192, 1193,	108, 109, 110, 111, 112, 113,
1194, 1195, 1196, 1197, 1198,	114, 115, 167, 190, 191, 318,
1199, 1200, 1201, 1202, 1203,	319, 409, 410, 412, 413, 738,
1204, 1205, 1206, 1207, 1208,	739, 740, 741, 776, 785, 793,
1209, 1210, 1211, 1212, 1213,	797, 814, 815, 816, 905, 943,
1214, 1215, 1216, 1217, 1218,	969, 970, 971, 972, 1045, 1093,
1219, 1220, 1221, 1222, 1223,	1094, 1130, 1131, 1167, 1253,
1224, 1225, 1226, 1228, 1229,	1254, 1255, 1256, 1257, 1259,
1238, 1240, 1241, 1242, 1243,	1278, 1315, 1341, 1342, 1343, 1344
1244, 1245, 1246, 1247, 1344, 1351	
\{	\text{count} \tag{419},
\} 376, 739, 1254	420, 423, 1109, 1111, 1112, 1113 \count@
	$\langle count @ (43, 772, 772)$
1256	
\^ 1256 \I 318, 323, 967, 969, 1339, 1341	776, 778, 779, 783, 785, 786,
\ 318, 323, 967, 969, 1339, 1341	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801,
	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915,
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots \cdots \cdot 743, 1260
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdot \cdot \cdot 1181, 1193, 1213, 1226, 1230,
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdot \cdot \cdot 1181, 1193, 1213, 1226, 1230, 1231, 1233, 1234, 1235, 1237, 1238
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdot 1181, 1193, 1213, 1226, 1230, 1231, 1233, 1234, 1235, 1237, 1238 \csname \cdot 14, 21, 50,
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \verb+\countdef++++++++++++++++++++++++++++++++++++$
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \verb+\countdef++++++++++++++++++++++++++++++++++++$
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots 743, 1260 \cr \ldots 1181, 1193, 1213, 1226, 1230, 1231, 1233, 1234, 1235, 1237, 1238 \csname \ldots \ldots 14, 150, 66, 76, 121, 124, 133, 136, 143, 154, 439, 442, 451, 474, 502, 742, 745, 748, 751, 806, 833, 1384
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \verb \countdef $
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \verb \countdef $
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots 743, 1260 \cr \ldots 1181, 1193, 1213, 1226, 1230, 1231, 1233, 1234, 1235, 1237, 1238 \csname \ldots 121, 124, 133, 136, 143, 154, 439, 442, 451, 474, 502, 742, 745, 748, 751, 806, 833, 1384 \\ \Delta D \text{DefChar} \ldots 1168, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182 \\ \detokenize \ldots 158, 162, 995, 996, 1002 \\ \dimen 533, 534, 535, 538, 539, 568, 569, 570, 571, 572, 576, 577, 578
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$ \begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \texttt{countdef} \ \dots \ \dots \ \ 743,\ 1260\\ \\ \texttt{cr} \ \dots \ 1181,\ 1193,\ 1213,\ 1226,\ 1230,\\ 1231,\ 1233,\ 1234,\ 1235,\ 1237,\ 1238\\ \\ \texttt{csname} \ \dots \ \ \ \ 14,\ 21,\ 50,\\ 66,\ 76,\ 121,\ 124,\ 133,\ 136,\ 143,\\ 154,\ 439,\ 442,\ 451,\ 474,\ 502,\\ 742,\ 745,\ 748,\ 751,\ 806,\ 833,\ 1384\\ \\ \hline \textbf{D} \\ \\ \texttt{DefChar} \ \dots \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$ \begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	776, 778, 779, 783, 785, 786, 787, 791, 793, 796, 797, 801, 802, 904, 906, 907, 908, 915, 1260, 1277, 1279, 1280, 1281, 1288 \countdef \cdots 743, 1260 \cr \cdots 1181, 1193, 1213, 1226, 1230, 1231, 1233, 1234, 1235, 1237, 1238 \csname \cdots 14, 21, 50, 66, 76, 121, 124, 133, 136, 143, 154, 439, 442, 451, 474, 502, 742, 745, 748, 751, 806, 833, 1384 D \text{D} \text{D} \text{DefChar} \cdots 1168, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182 \text{detokenize} \cdots 158, 162, 995, 996, 1002 \text{dimen} 533, 534, 535, 538, 539, 568, 569, 570, 571, 572, 576, 577, 578 \text{dimexpr} \cdots 526, 528, 553, 556, 564 \text{do} \cdots \cdots 906, 1262, 1279 \text{E} \text{\text{EdefEscapeHex}} 2, \frac{452}{452}, \frac{479}{479}, 1007, 1378 \text{\text{\text{EdefEscapeString}} \cdots \frac{466}{466}, \frac{488}{488}, 1087, 1382 \text{\text{\text{EdefSanitize}} \cdots \cdots \frac{466}{488}, 488, 462, 467 \text{\text{\text{\text{EdefUnescapeHex}}} \cdots \frac{132}{466}, \frac{453}{458}, \frac{452}{452}, \frac{467}{458}, \frac{452}{467}, 467 \text{\text{\text{\text{EdefUnescapeHex}}} \cdots \cdots \frac{467}{466}, \frac{485}{488}, 462, 467 \text{\text{\text{\text{EdefUnescapeHex}}} \cdots \cdots \cdots \cdots \cdots \frac{467}{467} \text{\text{\text{\text{EdefUnescapeHex}}} \cdots
\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$\begin{array}{c} 776,\ 778,\ 779,\ 783,\ 785,\ 786,\\ 787,\ 791,\ 793,\ 796,\ 797,\ 801,\\ 802,\ 904,\ 906,\ 907,\ 908,\ 915,\\ 1260,\ 1277,\ 1279,\ 1280,\ 1281,\ 1288\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$

\EdefUnescapeString 3 , 283 , 1162 , 1383	\ltx@percentchar 1340
\empty 17, 18	\ltx@ReturnAfterFi 178
\end 834, 1010, 1016, 1022,	\ltx@zero 216, 223, 227, 247, 248, 249,
1027, 1033, 1042, 1048, 1078,	$250, \ 251, \ 252, \ 253, \ 254, \ 255,$
1084, 1090, 1121, 1158, 1248, 1384	256, 257, 258, 259, 260, 261,
\endcsname 14, 21, 50,	262, 275, 278, 388, 432, 613, 614
66, 76, 121, 124, 133, 136, 143,	- ,,,,,,,
	${f M}$
154, 439, 442, 451, 474, 502,	
742, 745, 748, 751, 806, 833, 1384	\makeatletter 838, 901
\endinput 29, 119	\meaning 145
\endlinechar 4, 35, 71, 77, 89	\msg 1365, 1372, 1373
\errmessage	-
,	${f N}$
\escapechar 495	\NeedsTeXFormat 837
\eTeX 872	
\Expect 898, 1008, 1014, 1020,	\newcommand 889, 918, 938, 941, 965
1026, 1031, 1040, 1082, 1088, 1100	\newlinechar 1371
\ExpectVar 889,	\next
1009, 1015, 1021, 1032, 1041,	\nul 1175, 1188, 1208, 1226
	\number 576, 577, 578, 798
1047, 1055, 1083, 1089, 1128, 1165	
	\numexpr $424, 526, 528,$
${f F}$	553, 556, 563, 564, 997, 998, 1003
\ff 1180, 1192, 1212, 1226	
	O
${f G}$	\one 1176, 1199,
	1200, 1201, 1202, 1203, 1204,
\gdef 192, 200, 903, 1276	
	1219, 1220, 1221, 1222, 1223, 1224
I	\org@detokenize 995, 1002
\ifcase 214, 215, 393,	\org@numexpr 997, 1003
401, 545, 598, 611, 612, 651, 1101	
\ifnum 265, 268, 271, 272, 382,	P
	\PackageError 857, 871, 879
385, 416, 614, 650, 658, 661,	
662, 663, 664, 665, 666, 667,	\PackageInfo 26
668, 669, 670, 671, 709, 712,	\pdf@escapehex 480
668, 669, 670, 671, 709, 712,	
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793,	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ifPE@etex \cdots \cd	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ifPE@etex	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ifPE@etex 500, 506, 524, 550, 636, 683, 693, 725 \ifx . 15, 18, 21, 50, 58, 61, 121, 124,	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ifPE@etex	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ifPE@etex 500, 506, 524, 550, 636, 683, 693, 725 \ifx . 15, 18, 21, 50, 58, 61, 121, 124,	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \(\)ifPE@etex \ldots \ldot	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb \frac{1}{1} 1263,\ 1269,\ 1281\\ \\ \verb \frac{1}{1} 1263,\ 1269,\ 1281\\ \\ \verb \frac{1}{1} 1263,\ 1269,\ 1281\\ \\ \hline \frac{1}{1} 1263,\ 1269,\ 1281\\ \\ \hline \frac{1}{1} 1263,\ 1269,\ 1281\\ \\ \hline \frac{1}{1} 124,\ 136,\ 143,\ 175,\ 201,\ 205,\ 300,\ 305,\ 439,\ 442,\ 451,\ 502,\ 518,\ 591,\ 592,\ 648,\ 707,\ 742,\ 745,\\ \\ \end{array}$	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \verb \ffPE@etex $	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398 \PE@@NormalizeLineEnd 296, 299
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb \freq $	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398 \PE@@NormalizeLineEnd 296, 299 \PE@@OctChar 552, 560
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb \frequetex $	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398 \PE@@NormalizeLineEnd 296, 299 \PE@QOctChar 552, 560 \PE@AtEnd 95, 96, 119, 491, 735
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb $	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398 \PE@NormalizeLineEnd 296, 299 \PE@OctChar 552, 560 \PE@AtEnd 95, 96, 119, 491, 735 \PE@backslash 494, 561, 575
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb \frequetex $	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398 \PE@NormalizeLineEnd 296, 299 \PE@OctChar 552, 560 \PE@AtEnd 95, 96, 119, 491, 735 \PE@backslash 494, 561, 575 \PE@CheckEndBackslash 373
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb $	\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398 \PE@NormalizeLineEnd 296, 299 \PE@OctChar 552, 560 \PE@AtEnd 95, 96, 119, 491, 735 \PE@backslash 494, 561, 575
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb $	\pdf@escapehex
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb $	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \(\) \	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ \(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398 \PE@@NormalizeLineEnd 296, 299 \PE@GOctChar 552, 560 \PE@AtEnd 95, 96, 119, 491, 735 \PE@backslash 494, 561, 575 \PE@backEndBackslash 373 \PE@DeHex 586, 590 \PE@DeName 196, 200, 229, 233 \PE@DeString 327, 436 \PE@dedefbabel 472, 480, 483, 486, 489
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ \(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ \(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\pdf@escapehex 480 \pdf@escapename 486 \pdf@escapestring 489 \pdf@unescapehex 483 \pdfescape 841, 845, 849, 858 \pdfescapehex 864, 1398 \pdfescapename 866, 1399 \pdfescapestring 867, 1399 \pdfunescapehex 865, 1058, 1398 \PE@@NormalizeLineEnd 296, 299 \PE@GOctChar 552, 560 \PE@AtEnd 95, 96, 119, 491, 735 \PE@backslash 494, 561, 575 \PE@backEndBackslash 373 \PE@DeHex 586, 590 \PE@DeName 196, 200, 229, 233 \PE@DeString 327, 436 \PE@dedefbabel 472, 480, 483, 486, 489
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ \(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \(\)ifPE@etex \ldots \ldot	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \(\) \	\pdf@escapehex
$\begin{array}{c} 668,\ 669,\ 670,\ 671,\ 709,\ 712,\\ 714,\ 715,\ 716,\ 778,\ 786,\ 793,\\ 801,\ 908,\ 1111,\ 1263,\ 1269,\ 1281\\ \\ \verb \ \text{lifPE@etex} & \dots & 500,\\ 506,\ 524,\ 550,\ 636,\ 683,\ 693,\ 725\\ \\ \verb \ 15,\ 18,\ 21,\ 50,\ 58,\ 61,\ 121,\ 124,\\ 133,\ 143,\ 175,\ 201,\ 205,\ 300,\\ 305,\ 439,\ 442,\ 451,\ 502,\ 518,\\ 591,\ 592,\ 648,\ 707,\ 742,\ 745,\\ 748,\ 751,\ 806,\ 890,\ 898,\ 1060,\ 1369\\ \\ \verb \ \text{limmediate} & \dots & 23,\ 52,\ 1365\\ \\ \verb \ \text{IncludeTests} & \dots & 886\\ \\ \\ \verb \ \text{input} & \dots & 125,\ 443,\ 807,\ 1252\\ \\ \\ \verb \ \text{literate} & \dots & 759,\ 761,\ 763\\ \\ \hline \begin{array}{c} \textbf{L}\\ \\ \\ \ \text{lccode} & \dots & 907,\ 1280\\ \\ \\ \ \text{lf} & \dots & 1179,\ 1191,\ 1211,\ 1226,\\ \\ 1228,\ 1229,\ 1230,\ 1231,\ 1232,\\ \\ 1233,\ 1234,\ 1235,\ 1236,\ 1237,\ 1238\\ \\ \\ \ \text{LoadCommand} & \dots & 807,\ 817\\ \\ \\ \ \text{LogTests} & \dots & 887\\ \\ \\ \\ \ \text{loop} & \dots & 757,\ 773,\ 784,\ 792,\ 1110\\ \\ \end{array}$	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ifPE@etex	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ifPE@etex	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \(\) \	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \ifPE@etex	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \(\) \	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \text{ifPE@etex} \tag{500}, 636, 683, 693, 725 \text{ifx} \tag{15}, 18, 21, 50, 58, 61, 121, 124, 133, 143, 175, 201, 205, 300, 305, 439, 442, 451, 502, 518, 591, 592, 648, 707, 742, 745, 748, 751, 806, 890, 898, 1060, 1369 \text{immediate} \tag{23}, 52, 1365 \text{IncludeTests} \tag{86} \text{input} \tag{25}, 443, 807, 1252 \text{iterate} \tag{75}, 761, 763 \text{L} \text{lccode} \tag{907}, 1280 \text{lf} \tag{1179}, 1191, 1211, 1226, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238} \text{LoadCommand} \tag{87}, 877, 773, 784, 792, 1110 \text{lowercase} \tag{911}, 937, 1284, 1310 \text{ltx@cclv} \tag{90ble} \tag{1172}, 1336 \text{ltx@gobble} \tag{1272}, 1336 \text{ltx@fundefined} \tag{408}	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \text{ifPEQetex} \tag{500}, 636, 683, 693, 725 \text{ifx} \tag{15}, 18, 21, 50, 58, 61, 121, 124, 133, 143, 175, 201, 205, 300, 305, 439, 442, 451, 502, 518, 591, 592, 648, 707, 742, 745, 748, 751, 806, 890, 898, 1060, 1369 \text{immediate} \tag{23}, 52, 1365 \text{IncludeTests} \tag{86} \text{input} \tag{25}, 443, 807, 1252 \text{iterate} \tag{75}, 761, 763 \text{L} \text{lccode} \tag{907}, 1280 \text{lf} \tag{1179}, 1191, 1211, 1226, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238 \text{LoadCommand} \tag{87} \text{LoadCommand} \tag{87}, 877, 773, 784, 792, 1110 \text{lowercase} \tag{911}, 937, 1284, 1310 \text{ltxQcclv} \tag{90ble} \tag{1194}, 9420, 423 \text{ltxQcrowif} \tag{1272}, 1336 \text{ltxQnewif} \tag{500}	\pdf@escapehex
668, 669, 670, 671, 709, 712, 714, 715, 716, 778, 786, 793, 801, 908, 1111, 1263, 1269, 1281 \text{ifPE@etex} \tag{500}, 636, 683, 693, 725 \text{ifx} \tag{15}, 18, 21, 50, 58, 61, 121, 124, 133, 143, 175, 201, 205, 300, 305, 439, 442, 451, 502, 518, 591, 592, 648, 707, 742, 745, 748, 751, 806, 890, 898, 1060, 1369 \text{immediate} \tag{23}, 52, 1365 \text{IncludeTests} \tag{86} \text{input} \tag{25}, 443, 807, 1252 \text{iterate} \tag{75}, 761, 763 \text{L} \text{lccode} \tag{907}, 1280 \text{lf} \tag{1179}, 1191, 1211, 1226, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238} \text{LoadCommand} \tag{87}, 877, 773, 784, 792, 1110 \text{lowercase} \tag{911}, 937, 1284, 1310 \text{ltx@cclv} \tag{90ble} \tag{1172}, 1336 \text{ltx@gobble} \tag{1272}, 1336 \text{ltx@fundefined} \tag{408}	\pdf@escapehex

```
\verb|\PEQhash| \dots \dots \underline{493},\, 654,\, 659,\, 681
                                        \test . 1051, 1068, 1071, 1072, 1073,
\PE@HexChar ..... 520, 524, 655, 660
                                              1074, 1075, 1076, 1077, 1095,
\PE@HexDigit . . 526, 527, 538, 539, 543
                                               1112, 1124, 1132, 1133, 1134,
\PE@InitUccodeHexDigit . 194, \frac{240}{584}
                                               1135, 1136, 1137, 1138, 1139,
                                               1140, 1141, 1142, 1143, 1144,
\PE@next 203, 208, 229, 233, 237, 302,
                                               1145, 1146, 1147, 1148, 1149,
      306, 308, 311, 394, 396, 398,
      402, 404, 406, 417, 421, 429,
                                               1150, 1151, 1152, 1153, 1154,
      593, 599, 603, 622, 625, 631, 634
                                               1155, 1156, 1157, 1161, 1183,
\PE@NormalizeLineEnd .... 286, \underline{294}
                                               1184, 1185, 1186, 1187, 1188,
\PE@OctAll ... 396, 404, 417, 422, 431
                                               1189, 1190, 1191, 1192, 1193,
\PE@OctChar ..... <u>550</u>, 710, 713
                                               1194, 1195, 1196, 1197, 1198,
                                               1199, 1200, 1201, 1202, 1203,
\PE@OctI .....
                                               1204, 1205, 1206, 1207, 1208,
1209, 1210, 1211, 1212, 1213,
\PE@OctIII ..... 402, 415
\PE@onelevel@sanitize .....
                                               1214, 1215, 1216, 1217, 1218,
      ..... 138, 144, 149, 161, 187, 288
                                               1219, 1220, 1221, 1222, 1223,
                                               1224, 1225, 1228, 1229, 1230,
\PE@result ..... 195, 198, 202,
      207, 228, 232, 295, 297, 301,
                                               1231,\ 1232,\ 1233,\ 1234,\ 1235,
      304, 434, 512, 514, 536, 537,
                                               1236,\ 1237,\ 1238,\ 1240,\ 1241,
      573, 574, 585, 588, 621, 642,
                                               1242,\ 1243,\ 1244,\ 1245,\ 1246,\ 1247
                                        \TestResult ..... 1368, 1369, 1373
      644,\ 687,\ 688,\ 700,\ 703,\ 729,\ 730
\PE@sanitize ..... <u>165</u>
                                        \the ..... 77, 78, 79,
                                              80, 81, 82, 83, 84, 97, 423, 424,
\PE@SanitizeSpaceOther ......
      \dots 170, 185, 285, 454, 463, 468
                                              553, 556, 563, 564, 776, 796, 797
\PE@space@other ..... <u>166</u>, 177
                                        \TMP@EnsureCode ......
\PE@space@space ..... <u>169</u>, 615
                                               .. 94, 101, 102, 103, 104, 105,
                                               106, 107, 108, 109, 110, 111,
\PE@SpaceToOther ..... 171, 173
\PE@strip@prefix ..... 145, 147
                                               112, 113, 114, 115, 116, 117, 118
\PE@temp ..... 225, 228, 615, 618, 621
                                        \TMP@RequirePackage 122, 128, 440, 446
                                        \typeout 895, 1063, 1064, 1065, 1066, 1067
\PE@testA ..... 211,
      214, 223, 596, 598, 608, 611, 613
                                                          \mathbf{U}
\PE@testB . 212, 215, 223, 609, 612, 613
                                        \uccode ..... 116, 117, 118,
\PE@TestOctDigit ..... <u>381</u>, 393, 401
                                              223,\ 227,\ 241,\ 242,\ 243,\ 244,
\PE@TestUcHexDigit ......
                                              245, 246, 247, 248, 249, 250,
        214, 215, 264, 598, 611, 612, 1101
                                               251,\ 252,\ 253,\ 254,\ 255,\ 256,
\PE@ToHex ..... 508, 513, <u>517</u>
                                              257, 258, 259, 260, 261, 262,
\PEQUnescapeHex \dots 459, \underline{582}
                                              291, 292, 432, 613, 614, 1096, 1170
\PE@UnescapeName ...... 186, \underline{189}
                                        \uppercase ..... 210, 224,
\PE@UnescapeString ..... 287, \underline{320}
                                              314, 433, 595, 607, 617, 1097, 1171
\ProvidesFile ..... 840, 844, 848, 852
\ProvidesPackage ..... 19, 67
                                        \verb|\write| \dots \dots 23, 52, 1365|
                  R.
\range 1108, 1116, 1117, 1118, 1119, 1120
                                                          \mathbf{X}
\RangeCatcodeCheck .....
      . 790, 818, 819, 820, 821, 822,
                                        \x .... 14, 15, 18, 22, 26, 28, 51, 56,
                                              66, 75, 87, 168, 293, 315, 496,
      823,\ 824,\ 825,\ 826,\ 827,\ 828,\ 829
\RangeCatcodeInvalid .....
                                               499, 1007, 1008, 1009, 1013,
      1014, 1015, 1019, 1020, 1021,
                                               1025,\ 1026,\ 1030,\ 1031,\ 1032,
\repeat .. 757, 769, 780, 788, 803, 1114
                                               1036, 1040, 1041, 1046, 1047,
\RequirePackage ... 130, 448, 885, 1000
                                               1052, 1055, 1058, 1060, 1081,
\RestoreCatcodes .. 771, 774, 775, 830
                                               1082, 1083, 1087, 1088, 1089,
                                               1098, 1101, 1125, 1128, 1162, 1165
\space .... 796, 797, 805, 909, 1032,
                                                          \mathbf{Y}
      1047, 1062, 1157, 1226, 1261, 1282
                                        \y ..... 1037, 1039,
\stop ..... 860, 874, 882, 1249
                                              1053, 1054, 1055, 1059, 1060,
                                               1126, 1127, 1128, 1163, 1164, 1165
\tab ..... 1178, 1190, 1210, 1226
\Test ..... 809, 832, 1366,
      1378, 1379, 1380, 1381, 1382, 1383 \z ...... 1038, 1040, 1041
```