# The pdfescape package

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**Abstract**

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

## Contents

**1 Documentation** **2**
1.1 Additional unescape macros . . . 2
1.2 Sanitizing macro . . . 3

**2 Implementation** **3**
2.1 Reload check and package identification . . . 3
2.2 Catcodes . . . 4
2.3 Load package . . . 5
2.4 Sanitizing . . . 5
2.4.1 Space characters . . . 6
2.4.2 Space normalization . . . 6
2.5 `\EdefUnescapeName` . . . 6
2.6 `\EdefUnescapeString` . . . 8
2.7 User macros (pdfTeX analogues) . . . 11
2.8 Help macros . . . 12
2.8.1 Characters . . . 12
2.8.2 Switch for ε-TeX . . . 13
2.9 Conversions . . . 13
2.9.1 Conversion to hex string . . . 13
2.9.2 Character code to octal number . . . 14
2.9.3 Unpack hex string . . . 14
2.9.4 Conversion to PDF name . . . 15
2.9.5 Conversion to PDF string . . . 16

**3 Test** **17**
3.1 Catcode checks for loading . . . 17
3.2 Macro tests . . . 19
3.3 Test with `\pdfescape...` commands . . . 19
3.4 Test without `\pdfescape...`, with ε-TeX . . . 19
3.5 Test without `\pdfescape...` and ε-TeX . . . 19
3.6 Test with LuaTeX . . . 19
3.7 Check/ensure test preconditions . . . 19
3.7.1 Check `\pdfescape...` . . . 19
3.7.2 Check ε-TeX . . . 19
3.7.3 Check LuaTeX . . . 20
3.8 Common part . . . 20
3.8.1 Test for iniTeX . . . 26

**4 Installation** **28**
4.1 Download . . . 28
4.2 Bundle installation . . . 28
4.3 Package installation . . . 29
4.4 Refresh file name databases . . . 29
4.5 Some details for the interested . . . 29

**5 Catalogue** **30**

**6 History** **30**
[2007/02/21 v1.0] . . . 30
[2007/02/25 v1.1] . . . 30
[2007/03/20 v1.2] . . . 31
[2007/04/11 v1.3] . . . 31
[2007/04/21 v1.4] . . . 31
[2007/08/27 v1.5] . . . 31
[2007/09/09 v1.6] . . . 31
[2007/10/27 v1.7] . . . 31
[2007/11/11 v1.8] . . . 31
[2010/03/01 v1.9] . . . 31
[2010/11/12 v1.10] . . . 31
[2011/01/30 v1.11] . . . 31
[2011/04/04 v1.12] . . . 31
[2011/11/25 v1.13] . . . 31

**7 Index** **32**

# 1 Documentation

`\EdefEscapeHex {`⟨*cmd*⟩`} {`⟨*string*⟩`}`
`\EdefUnescapeHex {`⟨*cmd*⟩`} {`⟨*string*⟩`}`
`\EdefEscapeName {`⟨*cmd*⟩`} {`⟨*string*⟩`}`
`\EdefEscapeString {`⟨*cmd*⟩`} {`⟨*string*⟩`}`

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

For example, if pdfTEX >= 1.30 is present, then `\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 {`⟨*cmd*⟩`} {`⟨*string*⟩`}`

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 {⟨cmd⟩} {⟨string⟩}`

Macro ⟨*cmd*⟩ stores the unescaped string in ⟨*string*⟩. 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 {⟨cmd⟩} {⟨string⟩}`

Argument ⟨*string*⟩ is expanded, converted to a string of tokens with catcode 12 (other) and space tokens, and stored in macro ⟨*cmd*⟩.

## 2 Implementation

```
1 ⟨*package⟩
```

### 2.1 Reload check and package identification

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

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

Package identification:

```
33 \begingroup\catcode61\catcode48\catcode32=10\relax%
34   \catcode13=5 % ^^M
35   \endlinechar=13 %
36   \catcode35=6 % #
37   \catcode39=12 % '
38   \catcode40=12 % (
39   \catcode41=12 % )
40   \catcode44=12 % ,
```

```
  \catcode45=12 % -
  \catcode46=12 % .
  \catcode47=12 % /
  \catcode58=12 % :
  \catcode64=11 % @
  \catcode91=12 % [
  \catcode93=12 % ]
  \catcode123=1 % {
  \catcode125=2 % }
  \expandafter\ifx\csname ProvidesPackage\endcsname\relax
    \def\x#1#2#3[#4]{\endgroup
      \immediate\write-1{Package: #3 #4}%
      \xdef#1{#4}%
    }%
  \else
    \def\x#1#2[#3]{\endgroup
      #2[{#3}]%
      \ifx#1\@undefined
        \xdef#1{#3}%
      \fi
      \ifx#1\relax
        \xdef#1{#3}%
      \fi
    }%
  \fi
\expandafter\x\csname ver@pdfescape.sty\endcsname
\ProvidesPackage{pdfescape}%
  [2011/11/25 v1.13 Implements pdfTeX's escape features (HO)]%
```

## 2.2 Catcodes

```
\begingroup\catcode61\catcode48\catcode32=10\relax%
  \catcode13=5 % ^^M
  \endlinechar=13 %
  \catcode123 1 % {
  \catcode125 2 % }
  \catcode64 11 %
  \def\x{\endgroup
    \expandafter\edef\csname PE@AtEnd\endcsname{%
      \endlinechar=\the\endlinechar\relax
      \catcode13=\the\catcode13\relax
      \catcode32=\the\catcode32\relax
      \catcode35=\the\catcode35\relax
      \catcode61=\the\catcode61\relax
      \catcode64=\the\catcode64\relax
      \catcode123=\the\catcode123\relax
      \catcode125=\the\catcode125\relax
    }%
  }%
\x\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 % ^^M
\endlinechar=13 %
\catcode35=6 % #
\catcode64=11 % @
\catcode123=1 % {
\catcode125=2 % }
\def\TMP@EnsureCode#1#2#3{%
  \edef\PE@AtEnd{%
    \PE@AtEnd
    #1#2=\the#1#2\relax
  }%
  #1#2=#3\relax
```

```
}
\TMP@EnsureCode\catcode{0}{12}% ^^@
\TMP@EnsureCode\catcode{34}{12}% "
\TMP@EnsureCode\catcode{36}{3}% $
\TMP@EnsureCode\catcode{38}{4}% &
\TMP@EnsureCode\catcode{39}{12}% '
\TMP@EnsureCode\catcode{42}{12}% *
\TMP@EnsureCode\catcode{45}{12}% -
\TMP@EnsureCode\catcode{46}{12}% .
\TMP@EnsureCode\catcode{47}{12}% /
\TMP@EnsureCode\catcode{60}{12}% <
\TMP@EnsureCode\catcode{62}{12}% >
\TMP@EnsureCode\catcode{91}{12}% [
\TMP@EnsureCode\catcode{93}{12}% ]
\TMP@EnsureCode\catcode{94}{7}% ^
\TMP@EnsureCode\catcode{96}{12}% `
\TMP@EnsureCode\uccode{34}{0}% "
\TMP@EnsureCode\uccode{48}{0}% 0
\TMP@EnsureCode\uccode{61}{0}% =
\edef\PE@AtEnd{\PE@AtEnd\noexpand\endinput}
```

## 2.3 Load package

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname RequirePackage\endcsname\relax
  \def\TMP@RequirePackage#1[#2]{%
    \begingroup\expandafter\expandafter\expandafter\endgroup
    \expandafter\ifx\csname ver@#1.sty\endcsname\relax
      \input #1.sty\relax
    \fi
  }%
  \TMP@RequirePackage{ltxcmds}[2010/04/08]%
\else
  \RequirePackage{ltxcmds}[2010/04/08]%
\fi
```

## 2.4 Sanitizing

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

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname detokenize\endcsname\relax
  \long\def\EdefSanitize#1#2{%
    \begingroup
      \csname @safe@activestrue\endcsname
      \edef#1{#2}%
      \PE@onelevel@sanitize#1%
    \expandafter\endgroup
    \expandafter\def\expandafter#1\expandafter{#1}%
  }%
  \begingroup\expandafter\expandafter\expandafter\endgroup
  \expandafter\ifx\csname @onelevel@sanitize\endcsname\relax
    \def\PE@onelevel@sanitize#1{%
      \edef#1{\expandafter\PE@strip@prefix\meaning#1}%
    }%
    \def\PE@strip@prefix#1>{}%
  \else
    \let\PE@onelevel@sanitize\@onelevel@sanitize
  \fi
\else
  \long\def\EdefSanitize#1#2{%
    \begingroup
      \csname @safe@activestrue\endcsname
      \edef#1{#2}%
```

```
    \expandafter\endgroup
    \expandafter\def\expandafter#1\expandafter{%
      \detokenize\expandafter{#1}%
    }%
  }%
  \def\PE@onelevel@sanitize#1{%
    \edef#1{\detokenize\expandafter{#1}}%
  }%
\fi
```

\PE@sanitize Macro \PE@sanitize is only defined for compatibility with version 1.4. Its use is deprecated.

```
\let\PE@sanitize\EdefSanitize
```

### 2.4.1 Space characters

\PE@space@other

```
\begingroup
  \catcode`\ =12\relax%
\def\x{\endgroup\def\PE@space@other{ }}\x\relax
```

\PE@space@space

```
\def\PE@space@space{ }
```

### 2.4.2 Space normalization

\PE@SanitizeSpaceOther

```
\def\PE@SanitizeSpaceOther#1{%
  \edef#1{\expandafter\PE@SpaceToOther#1 \relax}%
}
```

\PE@SpaceToOther

```
\def\PE@SpaceToOther#1 #2\relax{%
  #1%
  \ifx\\#2\\%
  \else
    \PE@space@other
    \ltx@ReturnAfterFi{%
      \PE@SpaceToOther#2\relax
    }%
  \fi
}
```

## 2.5 \EdefUnescapeName

\EdefUnescapeName

```
\def\EdefUnescapeName#1#2{%
  \EdefSanitize#1{#2}%
  \PE@SanitizeSpaceOther#1%
  \PE@UnescapeName#1%
  \PE@onelevel@sanitize#1%
}
```

\PE@UnescapeName

```
\begingroup
  \catcode`\$=6  % hash
  \catcode`\#=12 % other
  \gdef\PE@UnescapeName$1{%
    \begingroup
      \PE@InitUccodeHexDigit
      \def\PE@result{}%
```

```
      \expandafter\PE@DeName$1#\relax\relax
    \expandafter\endgroup
    \expandafter\def\expandafter$1\expandafter{\PE@result}%
  }%
  \gdef\PE@DeName$1#$2$3{%
    \ifx\relax$2%
      \edef\PE@result{\PE@result$1}%
      \let\PE@next\relax
    \else
      \ifx\relax$3%
        % wrong escape sequence in input
        \edef\PE@result{\PE@result$1#}%
        \let\PE@next\relax
      \else
        \uppercase{%
          \def\PE@testA{$2}%
          \def\PE@testB{$3}%
        }%
        \ifcase\ifcase\expandafter\PE@TestUcHexDigit\PE@testA
                 \ifcase\expandafter\PE@TestUcHexDigit\PE@testB
                   \ltx@zero
                 \else
                   \ltx@one
                 \fi
               \else
                 \ltx@one
               \fi
          \uccode\ltx@zero="\PE@testA\PE@testB\relax
          \uppercase{%
            \def\PE@temp{^^@}%
          }%
          \uccode\ltx@zero=\ltx@zero
          \edef\PE@result{\PE@result$1\PE@temp}%
          \let\PE@next\PE@DeName
        \else
          % wrong escape sequence in input
          \edef\PE@result{\PE@result$1#}%
          \def\PE@next{\PE@DeName$2$3}%
        \fi
      \fi
    \fi
    \PE@next
  }%
\endgroup
```

\PE@InitUccodeHexDigit

```
\def\PE@InitUccodeHexDigit{%
  \uccode`a=`A\relax
  \uccode`b=`B\relax
  \uccode`c=`C\relax
  \uccode`d=`D\relax
  \uccode`e=`E\relax
  \uccode`f=`F\relax
  \uccode`A=\ltx@zero
  \uccode`B=\ltx@zero
  \uccode`C=\ltx@zero
  \uccode`D=\ltx@zero
  \uccode`E=\ltx@zero
  \uccode`F=\ltx@zero
  \uccode`0=\ltx@zero
  \uccode`1=\ltx@zero
  \uccode`2=\ltx@zero
  \uccode`3=\ltx@zero
```

```
  \uccode`4=\ltx@zero
  \uccode`5=\ltx@zero
  \uccode`6=\ltx@zero
  \uccode`7=\ltx@zero
  \uccode`8=\ltx@zero
  \uccode`9=\ltx@zero
}
```

\PE@TestUcHexDigit

```
\def\PE@TestUcHexDigit#1{%
  \ifnum`#1<48 % 0
    \ltx@one
  \else
    \ifnum`#1>70 % F
      \ltx@one
    \else
      \ifnum`#1>57 % 9
        \ifnum`#1<65 % A
          \ltx@one
        \else
          \ltx@zero
        \fi
      \else
        \ltx@zero
      \fi
    \fi
  \fi
}
```

## 2.6 \EdefUnescapeString

\EdefUnescapeString

```
\def\EdefUnescapeString#1#2{%
  \EdefSanitize#1{#2}%
  \PE@SanitizeSpaceOther#1%
  \PE@NormalizeLineEnd#1%
  \PE@UnescapeString#1%
  \PE@onelevel@sanitize#1%
}

\begingroup
  \uccode`\8=10 % lf
  \uccode`\9=13 % cr
\def\x#1#2{\endgroup
```

\PE@NormalizeLineEnd

```
  \def\PE@NormalizeLineEnd##1{%
    \def\PE@result{}%
    \expandafter\PE@@NormalizeLineEnd##1#2\relax
    \let##1\PE@result
  }%
```

\PE@@NormalizeLineEnd

```
  \def\PE@@NormalizeLineEnd##1#2##2{%
    \ifx\relax##2%
      \edef\PE@result{\PE@result##1}%
      \let\PE@next\relax
    \else
      \edef\PE@result{\PE@result##1#1}%
      \ifx#1##2% lf
        \let\PE@next\PE@@NormalizeLineEnd
      \else
```

```
        \def\PE@next{\PE@@NormalizeLineEnd##2}%
      \fi
    \fi
    \PE@next
  }%
}%
\uppercase{%
  \x 89%
}

\begingroup
  \catcode`\|=0 %
  \catcode`\\=12 %
```

\PE@UnescapeString

```
  |gdef|PE@UnescapeString#1{%
    |begingroup
      |def|PE@result{}%
      |expandafter|PE@DeString#1\|relax
    |expandafter|endgroup
    |expandafter|def|expandafter#1|expandafter{|PE@result}%
  }%
```

\PE@DeString

```
  |gdef|PE@DeString#1\#2{%
    |ifx|relax#2%
      |edef|PE@result{|PE@result#1}%
      |let|PE@next|relax
    |else
      |if n#2%
        |uccode|ltx@zero=10 %
      |else|if r#2%
        |uccode|ltx@zero=13 %
      |else|if t#2%
        |uccode|ltx@zero=9 %
      |else|if b#2%
        |uccode|ltx@zero=8 %
      |else|if f#2%
        |uccode|ltx@zero=12 %
      |else
        |uccode|ltx@zero=|ltx@zero
      |fi|fi|fi|fi|fi
      |ifnum|uccode|ltx@zero>|ltx@zero
        |uppercase{%
          |edef|PE@temp{^^@}%
        }%
        |edef|PE@result{|PE@result#1|PE@temp}%
        |let|PE@next|PE@DeString
      |else
        |if\#2% backslash
          |edef|PE@result{|PE@result#1}%
          |let|PE@next|PE@CheckEndBackslash
        |else
          |ifnum`#2=10 % linefeed
            |edef|PE@result{|PE@result#1}%
            |let|PE@next|PE@DeString
          |else
            |ifcase|PE@TestOctDigit#2%
              |edef|PE@result{|PE@result#1}%
              |def|PE@next{|PE@OctI#2}%
            |else
              |edef|PE@result{|PE@result#1#2}%
              |let|PE@next|PE@DeString
```

```
            |fi
          |fi
        |fi
      |fi
    |fi
    |PE@next
  }%

\PE@CheckEndBackslash
  |gdef|PE@CheckEndBackslash#1{%
    |ifx|relax#1%
    |else
      |edef|PE@result{|PE@result\}%
      |expandafter|PE@DeString|expandafter#1%
    |fi
  }%

|endgroup

  \PE@TestOctDigit
\def\PE@TestOctDigit#1{%
  \ifnum`#1<48 % 0
    \ltx@one
  \else
    \ifnum`#1>55 % 7
      \ltx@one
    \else
      \ltx@zero
    \fi
  \fi
}

       \PE@OctI
\def\PE@OctI#1#2{%
  \ifcase\PE@TestOctDigit#2%
    \def\PE@next{\PE@OctII{#1#2}}%
  \else
    \def\PE@next{\PE@OctAll#1#2}%
  \fi
  \PE@next
}

      \PE@OctII
\def\PE@OctII#1#2{%
  \ifcase\PE@TestOctDigit#2%
    \def\PE@next{\PE@OctIII#1#2}%
  \else
    \def\PE@next{\PE@OctAll{#1}#2}%
  \fi
  \PE@next
}

\ltx@IfUndefined{numexpr}{%
  \catcode`\$=9 %
  \catcode`\&=14 %
}{%
  \catcode`\$=14 %
  \catcode`\&=9 %
}

     \PE@OctIII
\def\PE@OctIII#1#2#3{%
```

```
  \ifnum#1<4 %
    \def\PE@next{\PE@OctAll{#1#2#3}}%
  \else
$   \count\ltx@cclv#1 %
$   \advance\count\ltx@cclv -4 %
    \edef\PE@next{%
      \noexpand\PE@OctAll{%
$       \the\count\ltx@cclv
&       \the\numexpr#1-4\relax
        #2#3%
      }%
    }%
  \fi
  \PE@next
}
```

\PE@OctAll

```
\def\PE@OctAll#1{%
  \uccode\ltx@zero='#1\relax
  \uppercase{%
    \edef\PE@result{\PE@result^^@}%
  }%
  \PE@DeString
}
```

## 2.7 User macros (pdfTEX analogues)

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname RequirePackage\endcsname\relax
  \def\TMP@RequirePackage#1[#2]{%
    \begingroup\expandafter\expandafter\expandafter\endgroup
    \expandafter\ifx\csname ver@#1.sty\endcsname\relax
      \input #1.sty\relax
    \fi
  }%
  \TMP@RequirePackage{pdftexcmds}[2007/11/11]%
\else
  \RequirePackage{pdftexcmds}[2007/11/11]%
\fi
```

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdf@escapehex\endcsname\relax
```

\EdefEscapeHex

```
  \long\def\EdefEscapeHex#1#2{%
    \EdefSanitize#1{#2}%
    \PE@SanitizeSpaceOther#1%
    \PE@EscapeHex#1%
  }%
```

\EdefUnescapeHex

```
  \def\EdefUnescapeHex#1#2{%
    \EdefSanitize#1{#2}%
    \PE@UnescapeHex#1%
  }%
```

\EdefEscapeName

```
  \long\def\EdefEscapeName#1#2{%
    \EdefSanitize#1{#2}%
    \PE@SanitizeSpaceOther#1%
    \PE@EscapeName#1%
  }%
```

\EdefEscapeString

```
  \long\def\EdefEscapeString#1#2{%
    \EdefSanitize#1{#2}%
    \PE@SanitizeSpaceOther#1%
    \PE@EscapeString#1%
  }%

\else
```

\PE@edefbabel Help macro that adds support for babel's shorthand characters.

```
  \long\def\PE@edefbabel#1#2#3{%
    \begingroup
      \csname @save@activestrue\endcsname
      \edef#1{#2{#3}}%
    \expandafter\endgroup
    \expandafter\def\expandafter#1\expandafter{#1}%
  }%
```

\EdefEscapeHex

```
  \long\def\EdefEscapeHex#1#2{%
    \PE@edefbabel#1\pdf@escapehex{#2}%
  }%
```

\EdefUnescapeHex

```
  \def\EdefUnescapeHex#1#2{%
    \PE@edefbabel#1\pdf@unescapehex{#2}%
  }%
```

\EdefEscapeName

```
  \long\def\EdefEscapeName#1#2{%
    \PE@edefbabel#1\pdf@escapename{#2}%
  }%
```

\EdefEscapeString

```
  \long\def\EdefEscapeString#1#2{%
    \PE@edefbabel#1\pdf@escapestring{#2}%
  }%

  \expandafter\PE@AtEnd
\fi%
```

## 2.8 Help macros

### 2.8.1 Characters

Special characters with catcode 12 (other) are created and stored in macros.

\PE@hash

```
\edef\PE@hash{\string#}
```

\PE@backslash

```
\begingroup
  \escapechar=-1 %
\edef\x{\endgroup
  \def\noexpand\PE@backslash{\string\\}%
}
\x
```

### 2.8.2 Switch for -TEX

```
\ltx@newif\ifPE@etex
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname numexpr\endcsname\relax
\else
  \PE@etextrue
\fi
```

## 2.9 Conversions

### 2.9.1 Conversion to hex string

\PE@EscapeHex

```
\ifPE@etex
  \def\PE@EscapeHex#1{%
    \edef#1{\expandafter\PE@ToHex#1\relax}%
  }%
\else
  \def\PE@EscapeHex#1{%
    \def\PE@result{}%
    \expandafter\PE@ToHex#1\relax
    \let#1\PE@result
  }%
\fi
```

\PE@ToHex

```
\def\PE@ToHex#1{%
  \ifx\relax#1%
  \else
    \PE@HexChar{#1}%
    \expandafter\PE@ToHex
  \fi
}%
```

\PE@HexChar

```
\ifPE@etex
  \def\PE@HexChar#1{%
    \PE@HexDigit{\numexpr\dimexpr.0625\dimexpr`#1sp\relax\relax\relax}%
    \PE@HexDigit{%
      \numexpr`#1-16*\dimexpr.0625\dimexpr`#1sp\relax\relax\relax
    }%
  }%
\else
  \def\PE@HexChar#1{%
    \dimen0=`#1sp%
    \dimen2=.0625\dimen0 %
    \advance\dimen0-16\dimen2 %
    \edef\PE@result{%
      \PE@result
      \PE@HexDigit{\dimen2 }%
      \PE@HexDigit{\dimen0 }%
    }%
  }%
\fi
```

\PE@HexDigit

```
\def\PE@HexDigit#1{%
  \expandafter\string
  \ifcase#1%
    0\or 1\or 2\or 3\or 4\or 5\or 6\or 7\or 8\or 9\or
    A\or B\or C\or D\or E\or F%
  \fi
}
```

### 2.9.2 Character code to octal number

\PE@OctChar

```
\ifPE@etex
  \def\PE@OctChar#1{%
    \expandafter\PE@@OctChar
        \the\numexpr\dimexpr.015625\dimexpr`#1sp\relax\relax
            \expandafter\relax
        \expandafter\relax
        \the\numexpr\dimexpr.125\dimexpr`#1sp\relax\relax\relax
        \relax
        #1%
  }%
  \def\PE@@OctChar#1\relax#2\relax#3{%
    \PE@backslash
    #1%
    \the\numexpr#2-8*#1\relax
    \the\numexpr\dimexpr`#3sp\relax-8*#2\relax
  }%
\else
  \def\PE@OctChar#1{%
    \dimen0=`#1sp%
    \dimen2=.125\dimen0 %
    \dimen4=.125\dimen2 %
    \advance\dimen0-8\dimen2 %
    \advance\dimen2-8\dimen4 %
    \edef\PE@result{%
      \PE@result
      \PE@backslash
      \number\dimen4 %
      \number\dimen2 %
      \number\dimen0 %
    }%
  }%
\fi
```

### 2.9.3 Unpack hex string

\PE@UnescapeHex

```
\def\PE@UnescapeHex#1{%
  \begingroup
    \PE@InitUccodeHexDigit
    \def\PE@result{}%
    \expandafter\PE@DeHex#1\relax\relax
  \expandafter\endgroup
  \expandafter\def\expandafter#1\expandafter{\PE@result}%
}
```

\PE@DeHex

```
\def\PE@DeHex#1#2{%
  \ifx#2\relax
    \ifx#1\relax
      \let\PE@next\relax
    \else
      \uppercase{%
        \def\PE@testA{#1}%
      }%
      \ifcase\expandafter\PE@TestUcHexDigit\PE@testA
        \def\PE@next{%
          \PE@DeHex#10\relax\relax
        }%
      \else
```

```
        \let\PE@next\relax
      \fi
    \fi
  \else
    \uppercase{%
      \def\PE@testA{#1}%
      \def\PE@testB{#2}%
    }%
    \ifcase\expandafter\PE@TestUcHexDigit\PE@testA
      \ifcase\expandafter\PE@TestUcHexDigit\PE@testB
        \uccode\ltx@zero="\PE@testA\PE@testB\relax
        \ifnum\uccode\ltx@zero=32 %
          \let\PE@temp\PE@space@space
        \else
          \uppercase{%
            \def\PE@temp{^^@}%
          }%
        \fi
        \edef\PE@result{\PE@result\PE@temp}%
        \let\PE@next\PE@DeHex
      \else
        % invalid input sequence
        \def\PE@next{%
          \PE@DeHex#1%
        }%
      \fi
    \else
      % invalid input sequence
      \def\PE@next{\PE@DeHex#2}%
    \fi
  \fi
  \PE@next
}
```

### 2.9.4 Conversion to PDF name

\PE@EscapeName

```
\ifPE@etex
  \def\PE@EscapeName#1{%
    \edef#1{\expandafter\PE@EscapeNameTokens#1\relax}%
  }%
\else
  \def\PE@EscapeName#1{%
    \def\PE@result{}%
    \expandafter\PE@EscapeNameTokens#1\relax
    \let#1\PE@result
  }%
\fi
```

\PE@EscapeNameTokens

```
\def\PE@EscapeNameTokens#1{%
  \ifx\relax#1%
  \else
    \ifnum`#1<33 %
      \ifcase`#1 %
        % drop illegal zero
      \else
        \PE@EscapeNameAdd\PE@hash
        \PE@HexChar#1%
      \fi
    \else
      \ifnum`#1>126 %
```

```
        \PE@EscapeNameAdd\PE@hash
        \PE@HexChar#1%
      \else  \ifnum`#1=35  \PE@EscapeNameHashChar 23% #
        \else\ifnum`#1=37  \PE@EscapeNameHashChar 25% %
        \else\ifnum`#1=40  \PE@EscapeNameHashChar 28% (
        \else\ifnum`#1=41  \PE@EscapeNameHashChar 29% )
        \else\ifnum`#1=47  \PE@EscapeNameHashChar 2F% /
        \else\ifnum`#1=60  \PE@EscapeNameHashChar 3C% <
        \else\ifnum`#1=62  \PE@EscapeNameHashChar 3E% >
        \else\ifnum`#1=91  \PE@EscapeNameHashChar 5B% [
        \else\ifnum`#1=93  \PE@EscapeNameHashChar 5D% ]
        \else\ifnum`#1=123 \PE@EscapeNameHashChar 7B% {
        \else\ifnum`#1=125 \PE@EscapeNameHashChar 7D% }
        \else
          \PE@EscapeNameAdd{#1}%
        \fi\fi\fi\fi\fi\fi\fi\fi\fi\fi\fi\fi
      \fi
    \fi
    \expandafter\PE@EscapeNameTokens
  \fi
}%
\def\PE@EscapeNameHashChar#1#2{%
  \PE@EscapeNameAdd{\PE@hash\string#1\string#2}%
}%
```

`\PE@EscapeNameAdd`

```
\ifPE@etex
  \def\PE@EscapeNameAdd#1{#1}%
\else
  \def\PE@EscapeNameAdd#1{%
    \edef\PE@result{%
      \PE@result
      #1%
    }%
  }%
\fi
```

### 2.9.5 Conversion to PDF string

`\PE@EscapeString`

```
\ifPE@etex
  \def\PE@EscapeString#1{%
    \edef#1{\expandafter\PE@EscapeStringTokens#1\relax}%
  }%
\else
  \def\PE@EscapeString#1{%
    \begingroup
      \def\PE@result{}%
      \expandafter\PE@EscapeStringTokens#1\relax
    \expandafter\endgroup
    \expandafter\def\expandafter#1\expandafter{\PE@result}%
  }%
\fi
```

`\PE@EscapeStringTokens`

```
\def\PE@EscapeStringTokens#1{%
  \ifx\relax#1%
  \else
    \ifnum`#1<33 %
      \PE@OctChar#1%
    \else
      \ifnum`#1>126 %
```

```
        \PE@OctChar#1%
      \else  \ifnum`#1=40 \PE@EscapeStringAdd{\string\(}% (
        \else\ifnum`#1=41 \PE@EscapeStringAdd{\string\)}% )
        \else\ifnum`#1=92 \PE@EscapeStringAdd{\string\\}% \
        \else
          \PE@EscapeStringAdd{#1}%
        \fi\fi\fi
      \fi
    \fi
    \expandafter\PE@EscapeStringTokens
  \fi
}%
```

\PE@EscapeStringAdd

```
\ifPE@etex
  \def\PE@EscapeStringAdd#1{#1}%
\else
  \def\PE@EscapeStringAdd#1{%
    \edef\PE@result{%
      \PE@result
      #1%
    }%
  }%
\fi

\PE@AtEnd%
```

⟨/package⟩

# 3 Test

## 3.1 Catcode checks for loading

⟨*test1⟩

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

```
    \fi
    \next
  }%
  \let\repeat=\fi
}%
\def\RestoreCatcodes{}
\count@=0 %
\loop
  \edef\RestoreCatcodes{%
    \RestoreCatcodes
    \catcode\the\count@=\the\catcode\count@\relax
  }%
\ifnum\count@<255 %
  \advance\count@ 1 %
\repeat

\def\RangeCatcodeInvalid#1#2{%
  \count@=#1\relax
  \loop
    \catcode\count@=15 %
  \ifnum\count@<#2\relax
    \advance\count@ 1 %
  \repeat
}
\def\RangeCatcodeCheck#1#2#3{%
  \count@=#1\relax
  \loop
    \ifnum#3=\catcode\count@
    \else
      \errmessage{%
        Character \the\count@\space
        with wrong catcode \the\catcode\count@\space
        instead of \number#3%
      }%
    \fi
  \ifnum\count@<#2\relax
    \advance\count@ 1 %
  \repeat
}
\def\space{ }
\expandafter\ifx\csname LoadCommand\endcsname\relax
  \def\LoadCommand{\input pdfescape.sty\relax}%
\fi
\def\Test{%
  \RangeCatcodeInvalid{0}{47}%
  \RangeCatcodeInvalid{58}{64}%
  \RangeCatcodeInvalid{91}{96}%
  \RangeCatcodeInvalid{123}{255}%
  \catcode`\@=12 %
  \catcode`\\=0 %
  \catcode`\%=14 %
  \LoadCommand
  \RangeCatcodeCheck{0}{36}{15}%
  \RangeCatcodeCheck{37}{37}{14}%
  \RangeCatcodeCheck{38}{47}{15}%
  \RangeCatcodeCheck{48}{57}{12}%
  \RangeCatcodeCheck{58}{63}{15}%
  \RangeCatcodeCheck{64}{64}{12}%
  \RangeCatcodeCheck{65}{90}{11}%
  \RangeCatcodeCheck{91}{91}{15}%
  \RangeCatcodeCheck{92}{92}{0}%
  \RangeCatcodeCheck{93}{96}{15}%
```

```
  \RangeCatcodeCheck{97}{122}{11}%
  \RangeCatcodeCheck{123}{255}{15}%
  \RestoreCatcodes
}
\Test
\csname @@end\endcsname
\end
```

⟨/test1⟩

## 3.2 Macro tests

⟨*test2 | test3 | test4 | test5⟩

```
\NeedsTeXFormat{LaTeX2e}
\makeatletter
```

## 3.3 Test with \pdfescape... commands

⟨*test2⟩

```
\ProvidesFile{pdfescape-test2.tex}%
    [2011/11/25 v1.13 Test with \string\pdfescape... commands]%
```

⟨/test2⟩

## 3.4 Test without \pdfescape..., with -TEX

⟨*test3⟩

```
\ProvidesFile{pdfescape-test3.tex}%
    [2011/11/25 v1.13 Test without \string\pdfescape..., with e-TeX]%
```

⟨/test3⟩

## 3.5 Test without \pdfescape... and -TEX

⟨*test4⟩

```
\ProvidesFile{pdfescape-test4.tex}%
    [2011/11/25 v1.13 Test without \string\pdfescape... and e-TeX]%
```

⟨/test4⟩

## 3.6 Test with LuaTEX

⟨*test5⟩

```
\ProvidesFile{pdfescape-test5.tex}%
    [2011/11/25 v1.13 Test with LuaTeX]%
```

⟨/test5⟩

## 3.7 Check/ensure test preconditions

### 3.7.1 Check \pdfescape...

⟨*test2⟩

```
\@ifundefined{pdfescapehex}{%
  \PackageError{pdfescape-test2}{%
    Missing \string\pdfescape... commands%
  }{Test aborted.}%
  \stop
}{}
```

⟨/test2⟩

⟨*test3 | test4⟩

```
\let\pdfescapehex\@undefined
\let\pdfunescapehex\@undefined
\let\pdfescapename\@undefined
\let\pdfescapestring\@undefined
```

⟨/test3 | test4⟩

### 3.7.2 Check -TEX

⟨*test3⟩

```
\@ifundefined{numexpr}{%
  \PackageError{pdfescape-test3}{%
```

```
    Missing \eTeX
  }{Test aborted.}%
  \stop
}{}
⟨/test3⟩
```

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

### 3.7.3 Check LuaTEX

```
⟨*test5⟩
\@ifundefined{directlua}{%
  \PackageError{pdfescape-test5}{%
    Missing LuaTeX%
  }{Test aborted.}%
  \stop
}{}
⟨/test5⟩
```

## 3.8 Common part

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

```
\RequirePackage{qstest}
\IncludeTests{*}
\LogTests{log}{*}{*}

\newcommand*{\ExpectVar}[2]{%
  \ifx#1#2%
  \else
    \begingroup
      \@onelevel@sanitize#1%
      \@onelevel@sanitize#2%
      \typeout{[#1] <> [#2]}% hash-ok
    \endgroup
  \fi
  \Expect*{\ifx#1#2true\else false\fi}{true}%
}

\makeatletter
\begingroup
  \gdef\AllBytes{}%
  \count@=0 %
  \catcode0=12 %
  \@whilenum\count@<256 \do{%
    \lccode0=\count@
    \ifnum\count@=32 %
      \xdef\AllBytes{\AllBytes\space}%
    \else
      \lowercase{%
        \xdef\AllBytes{\AllBytes^^@}%
      }%
    \fi
    \advance\count@ by 1 %
  }%
\endgroup
\newcommand*{\AllBytesHex}{%
  000102030405060708090A0B0C0D0E0F%
  101112131415161718191A1B1C1D1E1F%
  202122232425262728292A2B2C2D2E2F%
  303132333435363738393A3B3C3D3E3F%
  404142434445464748494A4B4C4D4E4F%
  505152535455565758595A5B5C5D5E5F%
  606162636465666768696A6B6C6D6E6F%
```

```
  707172737475767778797A7B7C7D7E7F%
  808182838485868788898A8B8C8D8E8F%
  909192939495969798999A9B9C9D9E9F%
  A0A1A2A3A4A5A6A7A8A9AAABACADAEAF%
  B0B1B2B3B4B5B6B7B8B9BABBBCBDBEBF%
  C0C1C2C3C4C5C6C7C8C9CACBCCCDCECF%
  D0D1D2D3D4D5D6D7D8D9DADBDCDDDEDF%
  E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF%
  F0F1F2F3F4F5F6F7F8F9FAFBFCFDFEFF%
}
\@onelevel@sanitize\AllBytesHex
\expandafter\lowercase\expandafter{%
  \expandafter\newcommand\expandafter*\expandafter\AllBytesHexLC
      \expandafter{\AllBytesHex}%
}
\newcommand*{\AllBytesName}{}
\begingroup
  \catcode`\#=12 %
  \xdef\AllBytesName{%
    #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%
    #20!"#23$#25&'#28#29*+,-.#2F%
    0123456789:;#3C=#3E?%
    @ABCDEFGHIJKLMNO%
    PQRSTUVWXYZ#5B\@backslashchar#5D^_%
    `abcdefghijklmno%
    pqrstuvwxyz#7B|#7D\string~#7F%
    #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%
    #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%
    #C0#C1#C2#C3#C4#C5#C6#C7#C8#C9#CA#CB#CC#CD#CE#CF%
    #D0#D1#D2#D3#D4#D5#D6#D7#D8#D9#DA#DB#DC#DD#DE#DF%
    #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%
  }%
\endgroup
\@onelevel@sanitize\AllBytesName

\newcommand*{\AllBytesString}{}
\begingroup
  \def\|{|}%
  \edef\%{\@percentchar}%
  \catcode`\|=0 %
  \catcode`\#=12 %
  \catcode`\~=12 %
  \catcode`\\=12 %
  |xdef|AllBytesString{%
    \000\001\002\003\004\005\006\007\010\011\012\013\014\015\016\017%
    \020\021\022\023\024\025\026\027\030\031\032\033\034\035\036\037%
    \040!"#$|%&'\(\)*+,-./%
    0123456789:;<=>?%
    @ABCDEFGHIJKLMNO%
    PQRSTUVWXYZ[\\]^_%
    `abcdefghijklmno%
    pqrstuvwxyz{|}~\177%
    \200\201\202\203\204\205\206\207\210\211\212\213\214\215\216\217%
    \220\221\222\223\224\225\226\227\230\231\232\233\234\235\236\237%
    \240\241\242\243\244\245\246\247\250\251\252\253\254\255\256\257%
    \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%
    \320\321\322\323\324\325\326\327\330\331\332\333\334\335\336\337%
```

```
    \340\341\342\343\344\345\346\347\350\351\352\353\354\355\356\357%
    \360\361\362\363\364\365\366\367\370\371\372\373\374\375\376\377%
  }%
|endgroup
\@onelevel@sanitize\AllBytesString

⟨*test4⟩
\let\org@detokenize\detokenize
\let\detokenize\@undefined
\let\org@numexpr\numexpr
\let\numexpr\@undefined
⟨/test4⟩
\RequirePackage{pdfescape}
⟨*test4⟩
\let\detokenize\org@detokenize
\let\numexpr\org@numexpr
⟨/test4⟩

\begin{qstest}{all-hex}{\AllBytes, escapehex}
  \EdefEscapeHex\x{\AllBytes}%
  \Expect*{\x}*{\AllBytesHex}%
  \ExpectVar\x\AllBytesHex
\end{qstest}

\begin{qstest}{all-unhex}{\AllBytesHex, unescapehex}
  \EdefUnescapeHex\x{\AllBytesHex}%
  \Expect*{\x}*{\AllBytes}%
  \ExpectVar\x\AllBytes
\end{qstest}

\begin{qstest}{all-unhex-lc}{\AllBytesHexLC, unescapehex, lowercase}
  \EdefUnescapeHex\x{\AllBytesHexLC}%
  \Expect*{\x}*{\AllBytes}%
  \ExpectVar\x\AllBytes
\end{qstest}

\begin{qstest}{unhex-incomplete}{unescapehex, incomplete}
  \EdefUnescapeHex\x{4}%
  \Expect*{\x}{@}%
\end{qstest}

\begin{qstest}{unhex-space}{unescapehex, space}
  \EdefUnescapeHex\x{20}%
  \Expect*{\x}{ }%
  \ExpectVar\x\space
\end{qstest}

\begin{qstest}{unhex-spaces}{unescapehex, spaces}
  \EdefUnescapeHex\x{204020204120}%
  \def\y#1{%
    \edef\z{#1\string @#1#1\string A#1}%
  }\y{ }%
  \Expect*{\x}*{\z}%
  \ExpectVar\x\z
\end{qstest}

\begin{qstest}{unhex-hash}{unescapehex, hash}
  \catcode`\#=12 %
  \EdefUnescapeHex\x{#20}%
  \ExpectVar\x\space
\end{qstest}
```

```
\begin{qstest}{unhex-invalid}{unescapehex, invalid}
  \def\test#1#2{%
    \EdefUnescapeHex\x{#1}%
    \edef\y{#2}%
    \@onelevel@sanitize\y
    \ExpectVar\x\y
  }%
⟨*test2⟩
  \edef\x{\pdfunescapehex{4X}}%
  \edef\y{\string @}%
  \ifx\x\y
  \else
    \def~{\space}%
    \typeout{************************************}%
    \typeout{* Your pdfTeX contains bug 777.~~~~*}%
    \typeout{* This test is redefined as dummy, *}%
    \typeout{* because it triggers the bug.~~~~~*}%
    \typeout{************************************}%
    \def\test#1#2{}%
  \fi
⟨/test2⟩
  \test{X}{}%
  \test{XY}{}%
  \test{XYZ}{}%
  \test{A}{^^a0}%
  \test{AX}{^^a0}%
  \test{XA}{^^a0}%
  \test{XXAXX}{^^a0}%
\end{qstest}

\begin{qstest}{all-name}{\AllBytes, escapename}
  \EdefEscapeName\x{\AllBytes}%
  \Expect*{\x}*{\AllBytesName}%
  \ExpectVar\x\AllBytesName
\end{qstest}

\begin{qstest}{all-string}{\AllBytes, escapestring}
  \EdefEscapeString\x{\AllBytes}%
  \Expect*{\x}*{\AllBytesString}%
  \ExpectVar\x\AllBytesString
\end{qstest}

\begin{qstest}{uchexdigit}{unescape, uppercase hex digit}
  \catcode`\@=11 %
  \catcode0=12 %
  \def\test#1#2{%
    \uccode0=#1\relax
    \uppercase{%
      \def\x{^^@}%
    }%
    \Expect*{%
       \ifcase\expandafter\PE@TestUcHexDigit\x
         true%
       \else
         false%
       \fi
    }{#2}%
  }%
  \def\range#1#2#3{%
    \count0=#1\relax
    \loop
    \ifnum\count0<#2\relax
```

```
      \test{\count0}{#3}%
      \advance\count0 by 1 %
    \repeat
  }%
  \range{0}{47}{false}%
  \range{48}{57}{true}%
  \range{58}{64}{false}%
  \range{65}{70}{true}%
  \range{71}{255}{false}%
\end{qstest}

\begin{qstest}{unescapename}{unescapename}
  \def\test#1#2{%
    \EdefUnescapeName\x{#1}%
    \edef\y{#2}%
    \@onelevel@sanitize\y
    \ExpectVar\x\y
  }%
  \catcode`\#=12 %
  \catcode0=12 %
  \test{}{}%
  \test{x}{x}%
  \test{xy}{xy}%
  \test{#}{#}%
  \test{##}{##}%
  \test{###}{###}%
  \test{####}{####}%
  \test{#x}{#x}%
  \test{#xy}{#xy}%
  \test{#1}{#1}%
  \test{#40}{@}%
  \test{#400}{@0}%
  \test{#4x0}{#4x0}%
  \test{#ab}{^^ab}%
  \test{#00}{^^@}%
  \test{x#40y#40z}{x@y@z}%
  \test{#40#40#40#40}{@@@@}%
  \test{a#x}{a#x}%
  \test{a#xy}{a#xy}%
  \test{a#1}{a#1}%
  \test{a#40}{a@}%
  \test{a#400}{a@0}%
  \test{#20}{ }%
  \test{a#20}{a }%
  \test{a#20b}{a b}%
  \test{a#20#20#20b}{a \space\space b}%
\end{qstest}

\begin{qstest}{unescapestring}{unescapestring}
  \def\test#1#2{%
    \EdefUnescapeString\x{#1}%
    \edef\y{#2}%
    \@onelevel@sanitize\y
    \ExpectVar\x\y
  }%
  \catcode0=12 %
  \def\DefChar#1#2{%
    \begingroup
      \uccode0=#2\relax
    \uppercase{\endgroup
      \def#1{^^@}%
    }%
```

```
}%
\DefChar\nul{0}%
\DefChar\one{1}%
\DefChar\bel{8}%
\DefChar\tab{9}%
\DefChar\lf{10}%
\DefChar\ff{12}%
\DefChar\cr{13}%
\DefChar\\{92}%
\test{}{}%
\test{a}{a}%
\test{\\}{}%
\test{\\\\}{\\}%
\test{\\\\y}{\\y}%
\test{\\000}{\nul}%
\test{\\b}{\bel}%
\test{\\t}{\tab}%
\test{\\n}{\lf}%
\test{\\f}{\ff}%
\test{\\r}{\cr}%
\test{\\(}{(}%
\test{\\)}{)}%
\test{\\040}{ }%
\test{\\100}{@}%
\test{\\40}{ }%
\test{\\1}{\one}%
\test{\\01}{\one}%
\test{\\001}{\one}%
\test{\\18}{\one8}%
\test{\\018}{\one8}%
\test{\\0018}{\one8}%
\test{x\\}{x}%
\test{x\\\\}{x\\}%
\test{x\\\\y}{x\\y}%
\test{x\\000}{x\nul}%
\test{x\\b}{x\bel}%
\test{x\\t}{x\tab}%
\test{x\\n}{x\lf}%
\test{x\\f}{x\ff}%
\test{x\\r}{x\cr}%
\test{x\\(}{x(}%
\test{x\\)}{x)}%
\test{x\\040}{x }%
\test{x\\100}{x@}%
\test{x\\40}{x }%
\test{x\\1}{x\one}%
\test{x\\01}{x\one}%
\test{x\\001}{x\one}%
\test{x\\18}{x\one8}%
\test{x\\018}{x\one8}%
\test{x\\0018}{x\one8}%
\test{\\b\\t\\n\\f\\r\\(\\)\\\\\\000\\040}{%
  \bel\tab\lf\ff\cr()\\\nul\space
}%
\test{\\\lf}{}%
\test{x\\\lf}{x}%
\test{\cr}{\lf}%
\test{\cr\lf}{\lf}%
\test{\lf}{\lf}%
\test{\lf\cr}{\lf\lf}%
\test{x\cr}{x\lf}%
\test{x\cr\lf}{x\lf}%
```

```
  \test{x\lf}{x\lf}%
  \test{x\lf\cr}{x\lf\lf}%
  \test{x\\\cr\lf y\cr}{xy\lf}%
%
  \test{\\409}{ 9}%
  \test{\\800}{800}%
  \test{\\900}{900}%
  \test{\\578}{/8}%
  \test{\\477}{?}%
  \test{\\377}{^^ff}%
  \test{\\777}{^^ff}%
  \test{\\7777}{^^ff7}%
\end{qstest}
\stop
```

⟨/test2 | test3 | test4 | test5⟩

### 3.8.1 Test for iniTEX

```
⟨*test6⟩
\input pdfescape.sty\relax
\catcode`\{=1 %
\catcode`\}=2 %
\catcode`\#=6 %
\catcode`\^=7 %
\catcode`\@=11 %
\begingroup
  \catcode`\@=11 %
  \countdef\count@=255 %
  \def\space{ }%
  \long\def\@whilenum#1\do #2{%
    \ifnum #1\relax
      #2\relax
      \@iwhilenum{#1\relax#2\relax}%
    \fi
  }%
  \long\def\@iwhilenum#1{%
    \ifnum #1%
      \expandafter\@iwhilenum
    \else
      \expandafter\ltx@gobble
    \fi
    {#1}%
  }%
  \gdef\AllBytes{}%
  \count@=0 %
  \catcode0=12 %
  \@whilenum\count@<256 \do{%
    \lccode0=\count@
    \ifnum\count@=32 %
      \xdef\AllBytes{\AllBytes\space}%
    \else
      \lowercase{%
        \xdef\AllBytes{\AllBytes^^@}%
      }%
    \fi
    \advance\count@ by 1 %
  }%
\endgroup
\def\AllBytesHex{%
  000102030405060708090A0B0C0D0E0F%
  101112131415161718191A1B1C1D1E1F%
  202122232425262728292A2B2C2D2E2F%
```

```
  303132333435363738393A3B3C3D3E3F%
  404142434445464748494A4B4C4D4E4F%
  505152535455565758595A5B5C5D5E5F%
  606162636465666768696A6B6C6D6E6F%
  707172737475767778797A7B7C7D7E7F%
  808182838485868788898A8B8C8D8E8F%
  909192939495969798999A9B9C9D9E9F%
  A0A1A2A3A4A5A6A7A8A9AAABACADAEAF%
  B0B1B2B3B4B5B6B7B8B9BABBBCBDBEBF%
  C0C1C2C3C4C5C6C7C8C9CACBCCCDCECF%
  D0D1D2D3D4D5D6D7D8D9DADBDCDDDEDF%
  E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF%
  F0F1F2F3F4F5F6F7F8F9FAFBFCFDFEFF%
}
\ltx@onelevel@sanitize\AllBytesHex
\expandafter\lowercase\expandafter{%
  \expandafter\def\expandafter\AllBytesHexLC
      \expandafter{\AllBytesHex}%
}
\begingroup
  \catcode`\#=12 %
  \xdef\AllBytesName{%
    #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%
    #20!"#23$#25&'#28#29*+,-.#2F%
    0123456789:;#3C=#3E?%
    @ABCDEFGHIJKLMNO%
    PQRSTUVWXYZ#5B\ltx@backslashchar#5D^_%
    `abcdefghijklmno%
    pqrstuvwxyz#7B|#7D\string~#7F%
    #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%
    #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%
    #C0#C1#C2#C3#C4#C5#C6#C7#C8#C9#CA#CB#CC#CD#CE#CF%
    #D0#D1#D2#D3#D4#D5#D6#D7#D8#D9#DA#DB#DC#DD#DE#DF%
    #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%
  }%
\endgroup
\ltx@onelevel@sanitize\AllBytesName
\edef\AllBytesFromName{\expandafter\ltx@gobble\AllBytes}

\begingroup
  \def\|{|}%
  \edef\%{\ltx@percentchar}%
  \catcode`\|=0 %
  \catcode`\#=12 %
  \catcode`\~=12 %
  \catcode`\\=12 %
  |xdef|AllBytesString{%
    \000\001\002\003\004\005\006\007\010\011\012\013\014\015\016\017%
    \020\021\022\023\024\025\026\027\030\031\032\033\034\035\036\037%
    \040!"#$|%&'\(\)*+,-./%
    0123456789:;<=>?%
    @ABCDEFGHIJKLMNO%
    PQRSTUVWXYZ[\\]^_%
    `abcdefghijklmno%
    pqrstuvwxyz{|}~\177%
    \200\201\202\203\204\205\206\207\210\211\212\213\214\215\216\217%
    \220\221\222\223\224\225\226\227\230\231\232\233\234\235\236\237%
    \240\241\242\243\244\245\246\247\250\251\252\253\254\255\256\257%
```

```
    \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%
    \320\321\322\323\324\325\326\327\330\331\332\333\334\335\336\337%
    \340\341\342\343\344\345\346\347\350\351\352\353\354\355\356\357%
    \360\361\362\363\364\365\366\367\370\371\372\373\374\375\376\377%
  }%
|endgroup
\ltx@onelevel@sanitize\AllBytesString

\def\msg#{\immediate\write16}
\def\Test#1#2#3{%
  \begingroup
    #1\TestResult{#2}%
    \ifx\TestResult#3%
    \else
      \newlinechar=10 %
      \msg{Expect:^^J#3}%
      \msg{Result:^^J\TestResult}%
      \errmessage{\string#2 -\string#1-> \string#3}%
    \fi
  \endgroup
}
\Test\EdefEscapeHex\AllBytes\AllBytesHex
\Test\EdefUnescapeHex\AllBytesHex\AllBytes
\Test\EdefEscapeName\AllBytes\AllBytesName
\Test\EdefUnescapeName\AllBytesName\AllBytesFromName
\Test\EdefEscapeString\AllBytes\AllBytesString
\Test\EdefUnescapeString\AllBytesString\AllBytes

\csname @@end\endcsname\end
⟨/test6⟩
```

# 4 Installation

## 4.1 Download

**Package.** This package is available on CTAN[1]:

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
```

[1] ftp://ftp.ctan.org/tex-archive/

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

```
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

## 4.3 Package installation

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

```
tex pdfescape.dtx
```

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

```
pdfescape.sty            → tex/generic/oberdiek/pdfescape.sty
pdfescape.pdf            → doc/latex/oberdiek/pdfescape.pdf
test/pdfescape-test1.tex → doc/latex/oberdiek/test/pdfescape-test1.tex
test/pdfescape-test2.tex → doc/latex/oberdiek/test/pdfescape-test2.tex
test/pdfescape-test3.tex → doc/latex/oberdiek/test/pdfescape-test3.tex
test/pdfescape-test4.tex → doc/latex/oberdiek/test/pdfescape-test4.tex
test/pdfescape-test5.tex → doc/latex/oberdiek/test/pdfescape-test5.tex
test/pdfescape-test6.tex → doc/latex/oberdiek/test/pdfescape-test6.tex
pdfescape.dtx            → source/latex/oberdiek/pdfescape.dtx
```

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

## 4.4 Refresh file name databases

If your TEX distribution (teTEX, mikTEX, ...) relies on file name databases, you must refresh these. For example, teTEX users run `texhash` or `mktexlsr`.

## 4.5 Some details for the interested

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

```
pdftk pdfescape.pdf unpack_files output .
```

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

**plain TEX:** Run docstrip and extract the files.

**LATEX:** Generate the documentation.

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

```
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 pdfLaTeX:

```
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`.

```
⟨*catalogue⟩
<?xml version='1.0' encoding='us-ascii'?>
<!DOCTYPE entry SYSTEM 'catalogue.dtd'>
<entry datestamp='$Date$' modifier='$Author$' id='pdfescape'>
  <name>pdfescape</name>
  <caption>Implements pdfTeX's escape features using TeX or e-TeX.</caption>
  <authorref id='auth:oberdiek'/>
  <copyright owner='Heiko Oberdiek' year='2007,2010,2011'/>
  <license type='lppl1.3'/>
  <version number='1.13'/>
  <description>
    This package implements <xref refid='pdftex'>pdfTeX</xref>'s
    escape features (<tt>\pdfescapehex</tt>, <tt>\pdfunescapehex</tt>,
    <tt>\pdfescapename</tt>, <tt>\pdfescapestring</tt>) using TeX or
    e-TeX.
    <p/>
    The package is part of the <xref refid='oberdiek'>oberdiek</xref>
    bundle.
  </description>
  <documentation details='Package documentation'
      href='ctan:/macros/latex/contrib/oberdiek/pdfescape.pdf'/>
  <ctan file='true' path='/macros/latex/contrib/oberdiek/pdfescape.dtx'/>
  <miktex location='oberdiek'/>
  <texlive location='oberdiek'/>
  <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
</entry>
⟨/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 LuaTeX 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).

# 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

\# ..... 191, 327, 352, 740, 943, 970, 1045, 1130, 1255, 1315, 1342
\$ ..... 190, 409, 412
\% ..... 816, 968, 1340
\& ..... 410, 413
\( ..... 714, 976, 1348
\) ..... 715, 976, 1348
\@ ..... 741, 814, 1093, 1257, 1259
\@backslashchar ..... 950
\@firstofone ..... 749, 752
\@gobble ..... 746, 754
\@ifundefined ..... 856, 870, 878
\@iwhilenum ..... 1265, 1268, 1270
\@onelevel@sanitize ... 149, 893, 894, 936, 963, 992, 1054, 1127, 1164
\@percentchar ..... 968
\@undefined ..... .. 58, 864, 865, 866, 867, 996, 998
\@whilenum ..... 906, 1262, 1279
\\ 175, 319, 497, 716, 815, 972, 979, 1182, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1228, 1229, 1238, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1344, 1351
\{ ..... 738, 1253
\} ..... 376, 739, 1254
\^ ..... 1256
\| ..... 318, 323, 967, 969, 1339, 1341
\~ ..... 971, 1343

### Numbers

\0 ..... 974, 975, 976, 1346, 1347, 1348
\1 ..... 981, 1353
\2 ..... 982, 983, 984, 985, 1354, 1355, 1356, 1357
\3 ..... 986, 987, 988, 989, 1358, 1359, 1360, 1361
\8 ..... 291
\9 ..... 292

\␣ ..... 167, 716

### A

\advance ..... 420, 535, 571, 572, 779, 787, 802, 915, 1113, 1288
\aftergroup ..... 29
\AllBytes ..... 903, 909, 912, 1006, 1007, 1014, 1015, 1020, 1021, 1080, 1081, 1086, 1087, 1276, 1282, 1285, 1336, 1378, 1379, 1380, 1382, 1383
\AllBytesFromName ..... 1336, 1381
\AllBytesHex ..... 918, 936, 939, 1008, 1009, 1012, 1013, 1291, 1309, 1312, 1378, 1379
\AllBytesHexLC .. 938, 1018, 1019, 1311
\AllBytesName ..... 941, 944, 963, 1082, 1083, 1316, 1335, 1380, 1381
\AllBytesString ..... 965, 992, 1088, 1089, 1364, 1382, 1383

### B

\begin ..... 1006, 1012, 1018, 1024, 1029, 1035, 1044, 1050, 1080, 1086, 1092, 1123, 1160
\bel ..... 1177, 1189, 1209, 1226
\body ..... 758, 762

### C

\catcode ..... 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 33, 34, 36, 37, 38, 39, 40, 41, 42, 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, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 167, 190, 191, 318, 319, 409, 410, 412, 413, 738, 739, 740, 741, 776, 785, 793, 797, 814, 815, 816, 905, 943, 969, 970, 971, 972, 1045, 1093, 1094, 1130, 1131, 1167, 1253, 1254, 1255, 1256, 1257, 1259, 1278, 1315, 1341, 1342, 1343, 1344
\count ..... 419, 420, 423, 1109, 1111, 1112, 1113
\count@ ..... 743, 772, 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 ..... 743, 1260
\cr .. 1181, 1193, 1213, 1226, 1230, 1231, 1233, 1234, 1235, 1237, 1238
\csname ..... 14, 21, 50, 66, 76, 121, 124, 133, 136, 143, 154, 439, 442, 451, 474, 502, 742, 745, 748, 751, 806, 833, 1384

### D

\DefChar ..... 1168, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182
\detokenize .. 158, 162, 995, 996, 1002

\dimen . 533, 534, 535, 538, 539, 568, 569, 570, 571, 572, 576, 577, 578
\dimexpr ..... 526, 528, 553, 556, 564
\do ..... 906, 1262, 1279

**E**

\EdefEscapeHex . *2*, 452, 479, 1007, 1378
\EdefEscapeName .. 461, 485, 1081, 1380
\EdefEscapeString 466, 488, 1087, 1382
\EdefSanitize ..... *3*, 132, 165, 184, 284, 453, 458, 462, 467
\EdefUnescapeHex ..... ..... 457, 482, 1013, 1019, 1025, 1030, 1036, 1046, 1052, 1379
\EdefUnescapeName . *2*, 183, 1125, 1381
\EdefUnescapeString *3*, 283, 1162, 1383
\empty ..... 17, 18
\end ..... 834, 1010, 1016, 1022, 1027, 1033, 1042, 1048, 1078, 1084, 1090, 1121, 1158, 1248, 1384
\endcsname ..... 14, 21, 50, 66, 76, 121, 124, 133, 136, 143, 154, 439, 442, 451, 474, 502, 742, 745, 748, 751, 806, 833, 1384
\endinput ..... 29, 119
\endlinechar ..... 4, 35, 71, 77, 89
\errmessage ..... 795, 1374
\escapechar ..... 495
\eTeX ..... 872
\Expect ..... 898, 1008, 1014, 1020, 1026, 1031, 1040, 1082, 1088, 1100
\ExpectVar ..... 889, 1009, 1015, 1021, 1032, 1041, 1047, 1055, 1083, 1089, 1128, 1165

**F**

\ff ..... 1180, 1192, 1212, 1226

**G**

\gdef ..... 192, 200, 903, 1276

**I**

\ifcase ..... 214, 215, 393, 401, 545, 598, 611, 612, 651, 1101
\ifnum ..... 265, 268, 271, 272, 382, 385, 416, 614, 650, 658, 661, 662, 663, 664, 665, 666, 667, 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, 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
\immediate ..... 23, 52, 1365
\IncludeTests ..... 886
\input ..... 125, 443, 807, 1252
\iterate ..... 759, 761, 763

**L**

\lccode ..... 907, 1280
\lf ..... 1179, 1191, 1211, 1226, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238
\LoadCommand ..... 807, 817
\LogTests ..... 887
\loop ..... 757, 773, 784, 792, 1110
\lowercase ..... 911, 937, 1284, 1310
\ltx@backslashchar ..... 1322
\ltx@cclv ..... 419, 420, 423
\ltx@gobble ..... 1272, 1336
\ltx@IfUndefined ..... 408
\ltx@newif ..... 500
\ltx@one 218, 221, 266, 269, 273, 383, 386
\ltx@onelevel@sanitize ..... ..... 1309, 1335, 1364
\ltx@percentchar ..... 1340
\ltx@ReturnAfterFi ..... 178
\ltx@zero 216, 223, 227, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 275, 278, 388, 432, 613, 614

**M**

\makeatletter ..... 838, 901
\meaning ..... 145
\msg ..... 1365, 1372, 1373

**N**

\NeedsTeXFormat ..... 837
\newcommand ... 889, 918, 938, 941, 965
\newlinechar ..... 1371
\next ..... 763, 765, 767
\nul ..... 1175, 1188, 1208, 1226
\number ..... 576, 577, 578, 798
\numexpr ..... 424, 526, 528, 553, 556, 563, 564, 997, 998, 1003

**O**

\one ..... 1176, 1199, 1200, 1201, 1202, 1203, 1204, 1219, 1220, 1221, 1222, 1223, 1224
\org@detokenize ..... 995, 1002
\org@numexpr ..... 997, 1003

**P**

\PackageError ..... 857, 871, 879
\PackageInfo ..... 26
\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
\PE@DeHex ..... 586, 590
\PE@DeName ..... 196, 200, 229, 233

\PE@DeString . . . . . 327, 436
\PE@edefbabel . . 472, 480, 483, 486, 489
\PE@EscapeHex . . . . . 455, 506
\PE@EscapeName . . . . . 464, 636
\PE@EscapeNameAdd . . . . . 654, 659, 673, 681, 683
\PE@EscapeNameHashChar . . . . . 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 680
\PE@EscapeNameTokens . . 638, 643, 647
\PE@EscapeString . . . . . 469, 693
\PE@EscapeStringAdd . . . . . 714, 715, 716, 718, 725
\PE@EscapeStringTokens . 695, 701, 706
\PE@etextrue . . . . . 504
\PE@hash . . . . . 493, 654, 659, 681
\PE@HexChar . . . . . 520, 524, 655, 660
\PE@HexDigit . . 526, 527, 538, 539, 543
\PE@InitUccodeHexDigit . 194, 240, 584
\PE@next 203, 208, 229, 233, 237, 302, 306, 308, 311, 394, 396, 398, 402, 404, 406, 417, 421, 429, 593, 599, 603, 622, 625, 631, 634
\PE@NormalizeLineEnd . . . . . 286, 294
\PE@OctAll . . . . 396, 404, 417, 422, 431
\PE@OctChar . . . . . 550, 710, 713
\PE@OctI . . . . . 392
\PE@OctII . . . . . 394, 400
\PE@OctIII . . . . . 402, 415
\PE@onelevel@sanitize . . . . . 138, 144, 149, 161, 187, 288
\PE@result . . . . . 195, 198, 202, 207, 228, 232, 295, 297, 301, 304, 434, 512, 514, 536, 537, 573, 574, 585, 588, 621, 642, 644, 687, 688, 700, 703, 729, 730
\PE@sanitize . . . . . 165
\PE@SanitizeSpaceOther . . . . . 170, 185, 285, 454, 463, 468
\PE@space@other . . . . . 166, 177
\PE@space@space . . . . . 169, 615
\PE@SpaceToOther . . . . . 171, 173
\PE@strip@prefix . . . . . 145, 147
\PE@temp . . . . . 225, 228, 615, 618, 621
\PE@testA . . . . . 211, 214, 223, 596, 598, 608, 611, 613
\PE@testB . 212, 215, 223, 609, 612, 613
\PE@TestOctDigit . . . . . 381, 393, 401
\PE@TestUcHexDigit . . . . . 214, 215, 264, 598, 611, 612, 1101
\PE@ToHex . . . . . 508, 513, 517
\PE@UnescapeHex . . . . . 459, 582
\PE@UnescapeName . . . . . 186, 189
\PE@UnescapeString . . . . . 287, 320
\ProvidesFile . . . . . 840, 844, 848, 852
\ProvidesPackage . . . . . 19, 67

## R

\range 1108, 1116, 1117, 1118, 1119, 1120
\RangeCatcodeCheck . . . . . 790, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829
\RangeCatcodeInvalid . . . . . 782, 810, 811, 812, 813
\repeat . . 757, 769, 780, 788, 803, 1114
\RequirePackage . . . 130, 448, 885, 1000
\RestoreCatcodes . . 771, 774, 775, 830

## S

\space . . . . 796, 797, 805, 909, 1032, 1047, 1062, 1157, 1226, 1261, 1282
\stop . . . . . 860, 874, 882, 1249

## T

\tab . . . . . 1178, 1190, 1210, 1226
\Test . . . . . 809, 832, 1366, 1378, 1379, 1380, 1381, 1382, 1383
\test . 1051, 1068, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1095, 1112, 1124, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1161, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247
\TestResult . . . . . 1368, 1369, 1373
\the . . . . . 77, 78, 79, 80, 81, 82, 83, 84, 97, 423, 424, 553, 556, 563, 564, 776, 796, 797
\TMP@EnsureCode . . . . . 94, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118
\TMP@RequirePackage 122, 128, 440, 446
\typeout . . . . . 895, 1063, 1064, 1065, 1066, 1067

## U

\uccode . . . . . 116, 117, 118, 223, 227, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 291, 292, 432, 613, 614, 1096, 1170
\uppercase . . . . . 210, 224, 314, 433, 595, 607, 617, 1097, 1171

## W

\write . . . . . 23, 52, 1365

## X

\x . . . . 14, 15, 18, 22, 26, 28, 51, 56, 66, 75, 87, 168, 293, 315, 496,

499, 1007, 1008, 1009, 1013,
1014, 1015, 1019, 1020, 1021,
1025, 1026, 1030, 1031, 1032,
1036, 1040, 1041, 1046, 1047,
1052, 1055, 1058, 1060, 1081,
1082, 1083, 1087, 1088, 1089,
1098, 1101, 1125, 1128, 1162, 1165

**Y**

\y . . . . . 1037, 1039,
1053, 1054, 1055, 1059, 1060,
1126, 1127, 1128, 1163, 1164, 1165

**Z**

\z . . . . . 1038, 1040, 1041