Hypertext marks in LaTeX

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1 Documentation overview for hyperref

The documentation for package hyperref consists of several files:

Manual The user documentation is also available as HTML.

README Here information is collected that is not yet in the manual: new features, package compatibility, limitations, known problems, ...

ChangeLog This file records the version history.

Options This file provides a short option summary.

Bookmark talk, slides Slides for the talk "PDF information and navigation elements with hyperref, pdfTeX and thumbpdf" at EuroTeX 1999.

Bookmark talk, paper The paper version of the talk.

Source code documentation:

hyperref.dtx This is the source code documentation for hyperref (this file).

backref.dtx "Back referencing from bibliographical citations"

nameref.dtx "Section name references in LaTeX"

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3 File hycheck.tex

Many commands of LaTeX or other packages cannot be overloaded, but have to be redefined by hyperref directly. If these commands change in newer versions, these changes are not noticed by hyperref. With this test file this situation can be checked. It defines the command `\checkcommand` that is more powerful than LaTeX's `\CheckCommand`, because it takes `\DeclareRobustCommand` and optional parameters better into account.

```
⟨*check⟩
\documentclass{article}
\makeatletter
```

`\checklatex` Optional argument: release date of LaTeX.

```
\newcommand*{\checklatex}[1][]{%
  \typeout{}%
  \typeout{* Format: 'LaTeX2e' #1}%
  \typeout{\space\space Loaded: '\fmtname' \fmtversion}%
}%
```

`\checkpackage` The argument of `\checkpackage` is the package name without extension optionally followed by a release date.

```
\newcommand*{\checkpackage}[1]{%
  \def\HyC@package{#1}%
  \let\HyC@date\@empty
  \@ifnextchar[\HyC@getDate\HyC@checkPackage
}
```

`\HyC@getDate` The release date is scanned.

```
\def\HyC@getDate[#1]{%
  \def\HyC@date{#1}%
  \HyC@checkPackage
}
```

`\HyC@checkPackage`

```
\def\HyC@checkPackage{%
  \typeout{}
  \begingroup
    \edef\x{\endgroup
      \noexpand\RequirePackage{\HyC@package}%
      \ifx\HyC@date\@empty\relax\else[\HyC@date]\fi%
    }%
  \x
  \typeout{}%
  \typeout{%
    * Package '\HyC@package'%
    \ifx\HyC@date\@empty
    \else
      \space\HyC@date
    \fi
  }%
  \@ifundefined{ver@\HyC@package.sty}{%
  }{%
    \typeout{%
      \space\space Loaded: '\HyC@package' %
      \csname ver@\HyC@package.sty\endcsname
    }%
  }%
}
```

`\checkcommand` The macro `\checkcommand` parses the next tokens as a LaTeX definition and compares this definition with the current meaning of that command.

```
\newcommand*{\checkcommand}[1]{%
  \begingroup
  \ifx\long#1\relax
    \expandafter\HyC@checklong
  \else
    \def\HyC@defcmd{#1}%
    \expandafter\let\expandafter\HyC@next
      \csname HyC@\expandafter\@gobble\string#1\endcsname
    \expandafter\HyC@checkcommand
  \fi
}
```

`\HyC@checklong` The definition command `\def` or `\edef` is read.

```
\def\HyC@checklong#1{%
  \def\HyC@defcmd{\long#1}%
  \expandafter\let\expandafter\HyC@next
    \csname HyC@\expandafter\@gobble\string#1\endcsname
  \HyC@checkcommand
}
```

`\HyC@checkcommand` The optional star of LaTeX's definitions is parsed.

```
\def\HyC@checkcommand{%
  \ifx\HyC@next\relax
    \PackageError{hycheck}{%
      Unknown command `\expandafter\strip@prefix\meaning\HyC@cmd'%
    }\@ehd
    \expandafter\endinput
  \fi
  \@ifstar{%
    \def\HyC@star{*}%
    \HyC@check
  }{%
    \let\HyC@star\@empty
    \HyC@check
  }%
}
```

`\HyC@check` The macro `\HyC@check` reads the definition command.

```
\def\HyC@check#1{%
  \def\HyC@cmd{#1}%
  \let\HyC@org@cmd#1%
  \let#1\relax
  \let\HyC@param\@empty
  \HyC@Toks{}%
  \let\HyC@org@optcmd\HyC@noValue
  \let\HyC@org@robustcmd\HyC@noValue
  \let\HyC@org@robustoptcmd\HyC@noValue
  \HyC@next
}
```

`\HyC@noValue`

```
\def\HyC@noValue{NoValue}
```

`\HyC@newcommand` The code for `\newcommand`.

```
\def\HyC@newcommand{%
  \let\HyC@@cmd\HyC@cmd
  \@ifnextchar[\HyC@nc@opt\HyC@nc@noopt
}
```

`\HyC@Toks` A register for storing the default value of an optional argument.

```
\newtoks\HyC@Toks
```

`\HyC@nc@noopt` This macro `\HyC@nc@noopt` is called, if the parser has reached the definition text.

```
\long\def\HyC@nc@noopt#1{%
  \edef\x{%
    \expandafter\noexpand\HyC@defcmd
    \HyC@star
    \expandafter\noexpand\HyC@cmd
    \HyC@param\the\HyC@Toks
  }%
  \x{#1}%
  \HyC@doCheck
}
```

`\HyC@nc@opt` This macro scans the first optional argument of a LaTeX definition (number of arguments).

```
\def\HyC@nc@opt[#1]{%
  \def\HyC@param{[#1]}%
  \@ifnextchar[\HyC@nc@default\HyC@nc@noopt
}
```

`\HyC@nc@default` Macro `\HyC@nc@default` scans the default for an optional argument.

```
\def\HyC@nc@default[#1]{%
  \HyC@Toks={[{#1}]}%
  \edef\HyC@optcmd{%
    \expandafter\noexpand
    \csname\expandafter\string\HyC@@cmd\endcsname
  }%
  \expandafter\let\expandafter\HyC@org@optcmd\HyC@optcmd
  \HyC@nc@noopt
}
```

`\HyC@DeclareRobustCommand` `\DeclareRobustCommand{\cmd}` makes the command `\cmd` robust, that then calls `\cmd␣` with an space at the end of the command name, defined by `\newcommand`. Therefore the further parsing is done by `\HyC@nc@opt` or `\Hy@nc@noopt` of the `\HyC@newcommand` chain.

```
\def\HyC@DeclareRobustCommand{%
  \edef\HyC@robustcmd{%
    \expandafter\noexpand
    \csname\expandafter\expandafter\expandafter\@gobble
      \expandafter\string\HyC@cmd\space\endcsname
  }%
  \expandafter\let\expandafter\HyC@org@robustcmd\HyC@robustcmd
  \expandafter\let\HyC@robustcmd\relax
  \let\HyC@@cmd\HyC@robustcmd
  \@ifnextchar[\HyC@nc@opt\HyC@nc@noopt
}
```

`\HyC@def` The parameter text of `\def` or `\edef` is stored in the token register `\HyC@Toks`.

`\HyC@edef`

```
\def\HyC@def#1#{%
  \HyC@Toks={#1}%
```

```
  \HyC@nc@noopt
}
\let\HyC@edef\HyC@def
```

`\HyC@doCheck` This command performs the checks and prints the result.

```
\def\HyC@doCheck{%
  \typeout{* Checking `\HyC@string\HyC@cmd':}%
  \HyC@checkItem{cmd}%
  \HyC@checkItem{robustcmd}%
  \HyC@checkItem{optcmd}%
  \HyC@checkItem{robustoptcmd}%
  \endgroup
}
```

`\HyC@checkItem` A single check.

```
\def\HyC@checkItem#1{%
  \expandafter\ifx\csname HyC@org@#1\endcsname\HyC@noValue
  \else
    \expandafter\expandafter\expandafter\ifx
    \csname HyC@#1\expandafter\endcsname
    \csname HyC@org@#1\endcsname
      \expandafter\HyC@checkOk\csname HyC@#1\endcsname
    \else
      \expandafter\HyC@checkFailed
        \csname HyC@#1\expandafter\endcsname
        \csname HyC@org@#1\endcsname
    \fi
  \fi
}
```

`\HyC@string` `\HyC@meaning` Some shorthands.

```
\def\HyC@string#1{\expandafter\string#1}
\def\HyC@meaning#1{\expandafter\meaning#1}
```

`\HyC@checkOk` The result, if the check succeeds.

```
\def\HyC@checkOk#1{%
  \typeout{\space\space`\HyC@string#1' ok.}}
```

`\HyC@checkFailed` The result, if the check fails.

```
\def\HyC@checkFailed#1#2{%
  \typeout{\space\space`\HyC@string#1' failed.}%
  \typeout{\space\space* original: \meaning#2}%
  \typeout{\space\space* expected: \HyC@meaning#1}%
}

% ************************************************
⟨/check⟩
⟨*package⟩
```

4 Package options and setup

4.1 Save catcodes

There are many packages that change the standard catcodes.

First we save the original meaning of ‘ and = in the token register \toks@, because we need the two characters in the macros \Hy@SetCatcodes and \Hy@RestoreCatcodes.

```
\begingroup
  \@makeother\‘%
  \@makeother\=%
  \edef\x{%
    \edef\noexpand\x{%
      \endgroup
      \noexpand\toks@{%
        \catcode 96=\noexpand\the\catcode‘\noexpand\‘\relax
        \catcode 61=\noexpand\the\catcode‘\noexpand\=\relax
      }%
    }%
    \noexpand\x
  }%
\x
\@makeother\‘
\@makeother\=
```

\Hy@SetCatcodes

```
\def\Hy@SetCatcodes{%
  \@makeother\‘%
  \@makeother\=%
  \catcode‘\$=3
  \catcode‘\&=4
  \catcode‘\^=7
  \catcode‘\_=8
  \@makeother\|%
  \@makeother\:%
  \@makeother\(%
  \@makeother\)%
  \@makeother\[%
  \@makeother\]%
  \@makeother\/%
  \@makeother\!%
  \@makeother\<%
  \@makeother\>%
  \@makeother\.%
  \@makeother\;%
  \@makeother\+%
  \@makeother\-%
  \@makeother\"%
  \@makeother\’%
}
```

\Hy@RestoreCatcodes

```
\begingroup
  \def\x#1{\catcode‘\noexpand#1=\the\catcode‘#1\relax}%
  \xdef\Hy@RestoreCatcodes{%
    \the\toks@
    \x\$%
    \x\&%
    \x\^%
    \x\_%
    \x\|%
    \x\:%
    \x\(%
```

```
    \x\)%
    \x\[%
    \x\]%
    \x\/%
    \x\!%
    \x\<%
    \x\>%
    \x\.%
    \x\;%
    \x\+%
    \x\-%
    \x\"%
    \x\'%
  }%
\endgroup

\Hy@SetCatcodes
```

It needs the December 95 release of LaTeX, because it uses `\protected@write`, and it defines commands in options; and the page setup internal code changed at that point. It'll probably break with the later releases!

```
\RequirePackage{keyval}[1997/11/10]
\def\Hy@Warning#1{\PackageWarning{hyperref}{#1}}
\def\Hy@WarningNoLine#1{\PackageWarningNoLine{hyperref}{#1}}
\def\Hy@Info#1{\PackageInfo{hyperref}{#1}}
```

4.2 Compatibility with format dumps

`\AfterBeginDocument`

For use with pre-compiled formats, created using the `ldump` package, there needs to be 2 hooks for adding material delayed until `\begin{document}`. These are called `\AfterBeginDocument` and `\AtBeginDocument`. If `ldump` is not loaded, then a single hook suffices for normal LaTeX processing.

The default definition of `\AfterBeginDocument` cannot be done by `\let` because of problems with `xypic`.

```
\@ifundefined{AfterBeginDocument}{%
  \def\AfterBeginDocument{\AtBeginDocument}%
}{}%
```

4.3 Switches

```
\newif\ifHy@typexml
\newif\ifHy@activeanchor
\newif\ifHy@backref
\newif\ifHy@bookmarks
\newif\ifHy@bookmarksnumbered
\newif\ifHy@bookmarksopen
\newif\ifHy@breaklinks
\newif\ifHy@centerwindow
\newif\ifHy@CJKbookmarks
\newif\ifHy@colorlinks
\newif\ifHy@draft
\let\Hy@finaltrue\Hy@draftfalse
\let\Hy@finalfalse\Hy@drafttrue
\newif\ifHy@escapeform
\newif\ifHy@figures
\newif\ifHy@fitwindow
\newif\ifHy@frenchlinks
```

```
\newif\ifHy@hyperfootnotes
\newif\ifHy@hyperindex
\newif\ifHy@hypertexnames
\newif\ifHy@implicit
\newif\ifHy@linktocpage
\newif\ifHy@menubar
\newif\ifHy@naturalnames
\newif\ifHy@nesting
\newif\ifHy@newwindow
\newif\ifHy@pageanchor
\newif\ifHy@pagelabels
\newif\ifHy@pdfpagehidden
\newif\ifHy@pdfstring
\newif\ifHy@plainpages
\newif\ifHy@psize
\newif\ifHy@raiselinks
\newif\ifHy@seminarslides
\newif\ifHy@setpagesize
\newif\ifHy@texht
\newif\ifHy@toolbar
\newif\ifHy@unicode
\newif\ifHy@usetitle
\newif\ifHy@verbose
\newif\ifHy@windowui
\newif\ifHy@displaydoctitle
```

Defaults for the switches are now set.

```
\Hy@backreffalse
\Hy@bookmarksnumberedfalse
\Hy@bookmarksopenfalse
\Hy@bookmarkstrue
\Hy@breaklinksfalse
\Hy@centerwindowfalse
\Hy@CJKbookmarksfalse
\Hy@escapeformfalse
\Hy@figuresfalse
\Hy@fitwindowfalse
\Hy@hyperfootnotestrue
\Hy@hyperindextrue
\Hy@hypertexnamestrue
\Hy@implicittrue
\Hy@linktocpagefalse
\Hy@menubartrue
\Hy@naturalnamesfalse
\Hy@nestingfalse
\Hy@newwindowfalse
\Hy@pageanchortrue
\Hy@pagelabelstrue
\Hy@pdfpagehiddenfalse
\Hy@pdfstringfalse
\Hy@plainpagesfalse
\Hy@raiselinksfalse
\Hy@setpagesizetrue
\Hy@texhtfalse
\Hy@toolbartrue
\Hy@typexmlfalse
\Hy@unicodefalse
\Hy@usetitlefalse
```

```
\Hy@verbosefalse
\Hy@windowuitrue
\Hy@displaydoctitlefalse
```

5 Common help macros

\Hy@StepCount

```
\def\Hy@StepCount#1{\advance#1 by 1 }%
```

\Hy@GlobalStepCount

```
\def\Hy@GlobalStepCount#1{\global\advance#1 by 1 }%
```

```
\newdimen\@linkdim
\let\Hy@driver\@empty
\let\MaybeStopEarly\relax
\newcount\Hy@linkcounter
\newcount\Hy@pagecounter
\Hy@linkcounter0
\Hy@pagecounter0
```

5.1 Macros for recursions

\Hy@ReturnAfterElseFi
\Hy@ReturnAfterFi

The commands `\Hy@ReturnAfterElseFi` and `\Hy@ReturnAfterFi` avoid a too deep `\if`-nesting especially for recursive macros.

```
\long\def\Hy@ReturnAfterElseFi#1\else#2\fi{\fi#1}
\long\def\Hy@ReturnAfterFi#1\fi{\fi#1}
```

5.2 Babel's protection of shorthand characters

\Hy@safe@activestrue
\Hy@safe@activesfalse

Babel's switch setting commands cannot used directly, because they can be undefined if babel is not loaded.

```
\def\Hy@safe@activestrue{\csname @safe@activestrue\endcsname}
\def\Hy@safe@activesfalse{\csname @safe@activesfalse\endcsname}
```

5.3 Coordinate transformations

At some places numbers in pdf units are expected (eg: FitBH, ...). The following macros perform the transformation from TeX units (pt) to PDF units (bp).

\hypercalcbp

The user macro `\hypercalcbp` can be used, for example, inside option values:

```
pdfstartview={FitBH \hypercalcbp{\paperheight-\topmargin-1in}}
```

- It cannot be used inside `\usepackage`, because LaTeX expands the options before package hyperref is loaded and `\hypercalcbp` is defined.
- With e-TeX extensions an expandable implementation is very easy; `\hypercalcbp` can be used everywhere and is expanded at use.
- Without e-TeX's features `\hypercalcbp` cannot be implemented expandable (practically) and have to be supported by `\hypercalcbpdef`. Limitations:
  - Works only in options that use `\hypercalcbpdef` (currently only `pdfstartview`).
  - For calculations package `calc` has to be loaded.
  - The expansion of the argument is done at definition time.

Example (TEX):

```
\usepackage{calc}
\usepackage[...]{hyperref}
\hypersetup{
  pdfstartview={FitBH \hypercalcbp{\paperheight-\topmargin-1in
    -\headheight-\headsep}
}
```

\hypercalcbp

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname dimexpr\endcsname\relax
  \def\hypercalcbpdef#1#2{%
    \begingroup
      \toks@{}%
      \HyCal@scan#2\hypercalcbp\@nil
    \expandafter\endgroup
    \expandafter\def\expandafter#1\expandafter{\the\toks@}%
  }
  \def\HyCal@scan#1\hypercalcbp#2\@nil{%
    \toks@\expandafter{\the\toks@ #1}%
    \ifx\\#2\\%
    \else
      \Hy@ReturnAfterFi{%
        \HyCal@do#2\@nil
      }%
    \fi
  }
  \def\HyCal@do#1#2\@nil{%
    \@ifpackageloaded{calc}{}{%
      \Hy@Warning{%
        For calculations \string\hypercalcbp\space needs\MessageBreak
        package calc or e-TeX%
      }%
    }%
    \setlength{\dimen@}{#1}%
    \setlength{\dimen@}{0.99626401\dimen@}%
    \edef\x{%
      \toks@{%
        \the\toks@
        \strip@pt\dimen@
      }%
    }\x
    \HyCal@scan#2\@nil
  }
\else
  \def\hypercalcbp#1{%
    \strip@pt\dimexpr 0.99626401\dimexpr #1\relax\relax
  }
  \def\hypercalcbpdef{\def}
\fi
```

6 Dealing with PDF strings

The PDF string stuff done by Heiko Oberdiek.
Email: oberdiek@uni-freiburg.de.

Naming convention: All internal commands that are only needed by `\pdfstringdef` are prefixed with `\HyPsd@`.

6.1 Description of PDF strings

The PDF specification defines several places to hold text strings (bookmark names, document information, text annotations, etc.). The PDF strings have following properties:

- They are surrounded by parentheses. The hexadecimal form is not supported.
- Like PostScript language strings they use the same escaping mechanism:

`\\`	the backslash itself
`\)`, `\(`	unbalanced parentheses
`\n`, `\r`, `\t`, `\b`, `\f`	special white space escape sequences
`\`*`ddd`*	octal character code *ddd*

- Strings are stored either in PDFDocEncoding, which is a superset of ISOLatin1 and is compatible with Unicode with character codes below 256, or in Unicode.

6.2 Definition of `\pdfstringdef`

The central macro for dealing with PDF strings is `\pdfstringdef`. It defines a command `#1` to be the result of the conversion from the string in `#2` to a legal PDFDocEncoded string. Currently the definition is global, but this can be changed in the future.

Important: In TEX's view PDF strings are written to a file and are expanded only in its mouth. Stomach commands that cannot be expanded further aren't executed, they are written verbatim. But the PDF reader that reads such a string isn't a TEX interpreter!

The macro `\pdfstringdef` consists of three main parts:

1. Preprocessing. Here the expansion is prepared. The encoding is set and many commands are redefined, so that they work appropriate.
2. Expansion. The TEX string is expanded the first time to get a PDF string.
3. Postprocessing. The result of the expansion is checked and converted to the final form.

`\pdfstringdef` `\pdfstringdef` works on the tokens in `#2` and converts them to a PDF string as far as possible:

- The result should obey the rules of the PDF specification for strings.
- The string can safely processed by TEX, because the tokens have only catcodes 10 until 12.

The result is stored in the command token given in `#1`.

```
368 \def\pdfstringdef#1#2{%
```

Many redefinitions are needed, so all the work is done in a group.

```
369   \begingroup
```

6.2.1 Preprocessing

Octal escape sequences. To avoid problems with eight bit or non printable characters, the octal escape notation is supported. So most glyphs in the encoding definitions for PD1 and PU produce these octal escape sequences. All three octal digits have to be used:

- Wrong results are avoided, if digits follow that are not part of the octal sequence.
- Macros rely on the fact that the octal sequences always consist of three digits (vtex driver, Unicode support).

The escape sequences start with a backslash. By `\string` it will be printed. Therefore it is ensured that the TEX escape character indeed prints as a normal backslash. Eventually this line can be removed, because this is standard LATEX behaviour.

```
370 \escapechar`\\%
```

From the view of TEX a octal sequence consists of the command tokens `\0` until `\3` and two digits. For saving tokens `\0`, `\1`, `\2`, and `\3` are directly used without a preceding `\string` in the glyph definitions. This is done here locally by defining the `\0` until `\3` commands. So the user can use octal escape sequences directly, the disadvantage is that a previous definition of this short commands does not apply.

```
371 \edef\0{\string\0}%
372 \edef\1{\string\1}%
373 \edef\2{\string\2}%
374 \edef\3{\string\3}%
```

Setting font encoding. The unicode encoding uses `\8` and `\9` as marker for the higher byte. `\8` is an abbreviation for the higher bytes 0 until 7 that can be expressed by one digit. `\8` will be converted to `\00`. However `\9` only marks the next three digits as higher byte and will be removed later.

The encoding is set by `\enc@update` for optimizing reasons.

```
375 \ifHy@unicode
376   \edef\8{\string\8}%
377   \edef\9{\string\9}%
378   \fontencoding{PU}%
379   \HyPsd@UTFviii
380 \else
381   \fontencoding{PD1}%
382 \fi
383 \enc@update
```

Internal encoding commands. `\pdfstringdef` interpretes text strings which are not allowed to contain mathematical stuff. The text glyph commands will produce a warning, if called in math mode. But this warning disturbs while expanding. Therefore we check for math mode here, before `\@inmathwarn` will be disabled (see below).

```
384 \@inmathwarn\pdfstringdef
```

If a glyph is used, that isn't in the PD1/PU encoding there will be an infinite error loop, because the NFSS encoding stuff have to be expanded unprotected (`\edef`), so that the assigments of `\@changed@cmd` don't take place. To patch this behaviour I only found `\@inmathwarn` as a usable hook. While an `\edef` a warning message by `\@inmathwarn` or `\TextSymbolUnavailable` cannot be give out, so `\@inmathwarn` should be disabled. And with the help of it the assignments in `\@changed@cmd` can easily be caught (see below).

```
385 \let\@inmathwarn\HyPsd@inmathwarn
```

Unknown composite characters are built with `\add@accent`, so it is redefined to provide a warning.

```
\let\add@accent\HyPsd@add@accent
```

Commands that don't use NFSS directly. There are several commands that prints characters in the printable ASCII area that don't obey the NFSS, so they have to be redefined here.

```
\let\{\textbraceleft
\let\}\textbraceright
\let\\\textbackslash
\let\#\textnumbersign
\let\$\textdollar
\let\%\textpercent
\let\&\textampersand
%  \let\~\textasciitilde
\let\_\textunderscore
\let\P\textparagraph
\let\ldots\textellipsis
\let\dots\textellipsis
```

Newline `\newline` or `\\` do not work in bookmarks, in text annotations they should expand to `\r`. In pdf strings `\\` stands for a backslash. Therefore the commands are disabled now. The user can redefine them for a result what he want:

backslash: `\pdfstringdefDisableCommands{\let\\\textbackslash}`

new line: `\pdfstringdefDisableCommands{\let\\\textCR}`

disabled: `\pdfstringdefDisableCommands{\let\\\empty}`

At any case, however, the optional argument or the star cannot be scanned in a 100% sure manner.

```
\def\\{\pdfstringdefWarn\\}%
\def\newline{\pdfstringdefWarn\newline}%
```

Logos. Because the box shifting used in the TEX logo does not work while writing to a file, the standard TEX logos are redefined.

```
\def\TeX{TeX}%
\def\LaTeX{La\TeX}%
\def\LaTeXe{\LaTeX2e}%
\def\eTeX{e-\TeX}%
\def\MF{Metafont}%
\def\MP{Metapost}%
```

Standard font commands. Because font changes do not work, the standard font switching commands are disabled.

```
\let\emph\@firstofone
\let\textbf\@firstofone
\let\textit\@firstofone
\let\textmd\@firstofone
\let\textnormal\@firstofone
\let\textrm\@firstofone
\let\textsc\@firstofone
\let\textsf\@firstofone
\let\textsl\@firstofone
```

```
\let\texttt\@firstofone
\let\textup\@firstofone
\let\ttfamily\@empty
\let\sffamily\@empty
\let\itshape\@empty
\let\upshape\@empty
\let\bfseries\@empty
\let\rm\@empty
\let\Huge\@empty
\let\LARGE\@empty
\let\Large\@empty
\let\footnotesize\@empty
\let\huge\@empty
\let\large\@empty
\let\normalsize\@empty
\let\scriptsize\@empty
\let\small\@empty
\let\tiny\@empty
```

Package color.

```
\def\textcolor##1##{\@secondoftwo}%
```

Package babel. Whereever "naturalnames" is used, disable `\textlatin` (from Babel 3.6k). Thanks to Felix Neubauer (Email: `Felix.Neubauer@gmx.net`).

```
\let\textlatin\@firstofone
\@ifundefined{language@group}{}{%
  \csname HyPsd@babel@\language@group\endcsname
}%
\let\@safe@activestrue\relax
\let\@safe@activesfalse\relax
```

Disable `\cyr`, used in russianb.ldf.

```
\let\cyr\relax
```

Redefine `\es@roman`, used in spanish.ldf.

```
\let\es@roman\@Roman
```

Package german.

```
\let\glqq\textglqq
\let\grqq\textgrqq
\let\glq\textglq
\let\grq\textgrq
\let\flqq\textflqq
\let\frqq\textfrqq
\let\flq\textflq
\let\frq\textfrq
```

Package french. The support is deferred, because it needs `\GenericError` to be disabled (see below).

Package FrenchPro. This package uses:

`\if@mid@expandable{`not fully expandable code`}{`fully expandable code`}`

```
\let\if@mid@expandable\@firstoftwo
```

AMS classes.

```
\HyPSD@AMSclassfix
```

Redefinition of `\hspace` `\hspace` don't work in bookmarks, the following fix tries to set a space if the argument is a positive length.

```
\let\hspace\HyPsd@hspace
```

Commands of referencing and indexing systems. Some LaTeX commands that are legal in `\section` commands have to be disabled here.

```
\let\label\@gobble
\let\index\@gobble
\let\glossary\@gobble
\let\href\@secondoftwo
```

The `\ref` and `\pageref` is much more complicate because of their star form.

```
\let\ref\HyPsd@ref
\let\pageref\HyPsd@pageref
```

Also we need an expandable form of `\autoref`. Babel's shorthands are not supported inside the reference label.

```
\def\HyPsd@ar@get##1.##2\@nil{##1}%
\def\HyPsd@ar@tmp##1{%
  \expandafter\expandafter\expandafter\HyPsd@ar@get
    \expandafter\@fourthoffive##1\@empt\@empty.\@nil
}%
\def\auto@setref##1##2##3{%
  \ifx##1\relax
  \else
    \csname\HyPsd@ar@tmp{##1}%
      \expandafter\ifx\csname\HyPsd@ar@tmp{##1}autorefname\endcsname
                      \relax
      \else
        autoref%
      \fi
      name%
    \endcsname
    \space
    \expandafter##2##1\@empty\@empty
  \fi
}%
```

Miscellaneous commands.

```
\let\leavevmode\@empty
\let\mbox\@empty
```

`\halign` causes error messages because of the template character `#`.

```
\def\halign{\pdfstringdefWarn\halign\@gobble}%
```

Patch for cjk bookmarks.

```
\ifHy@CJKbookmarks
  \HyPsd@CJKhook
\fi
```

User hook. The switch `\Hy@pdfstring` is turned on. So user commands can detect that they are processed not to be typesetted within TEX's stomach, but to be expanded by the mouth to give a PDF string. At this place before interpreting the string in `#2` additional redefinitions can by added by the hook `\pdfstringdefPreHook`.

The position in the middle of the redefinitions is a compromise: The user should be able to provide his own (perhaps better) redefinitions, but some commands should have their original meaning, because they can be used in the hook (`\bgroup`, or `\@protected@testopt`, and `\@ifnextchar` for `\renewcommand`).

```
\Hy@pdfstringtrue
\pdfstringdefPreHook
```

Spaces. For checking the token of the string, spaces must be masked, because they cannot by caught by undelimited arguments.

```
\HyPsd@LetUnexpandableSpace\space
\HyPsd@LetUnexpandableSpace\ %
\HyPsd@LetUnexpandableSpace~%
\HyPsd@LetUnexpandableSpace\nobreakspace
```

Package xspace.

```
\@ifundefined{@xspace}{%
  \let\xspace\HyPsd@ITALCORR
}{%
  \let\xspace\HyPsd@XSPACE
}%
\let\/\HyPsd@ITALCORR
\let\bgroup\/%
\let\egroup\/%
```

Redefinitions of miscellaneous commands. Hyphenation does not make sense.

```
\let\discretionary\@gobbletwo
```

`\@ifstar` is defined in LATEX as follows:

```
\def\@ifstar#1{\@ifnextchar *{\@firstoftwo{#1}}}
```

`\@ifnextchar` doesn't work, because it uses stomach commands like `\let` and `\futurelet`. But it doesn't break. Whereas `\@firstoftwo{#1}` gives an error message because `\@firstoftwo` misses its second argument.

A mimicry of `\@ifnextchar` only with expandible commands would be very extensive and the result would be only an approximation. So here a cheaper solution follows in order to get rid of the error message at least:

```
\let\@ifnextchar\HyPsd@ifnextchar
\let\@ifnextchar\HyPsd@new@ifnextchar
\let\@protected@testopt\HyPsd@protected@testopt
```

6.2.2 Expansion

There are several possibilities to expand tokens within LATEX:

`\protected@edef`**:** The weakest form isn't usable, because it does not expand the font encoding commands. They are made roboust and protect themselves.

`\csname`**:** First the string is expanded whithin a `\csname` and `\endcsname`. Then the command name is converted to characters with catcode 12 by `\string` and the first escape character removed by `\@gobble`. This method has the great *advantage*

that stomach tokens that aren't allowed in PDF strings are detected by TEX and reported as errors in order to force the user to write correct things. So he get no wrong results by forgetting the proofreading of his text. But the *disadvantage* is that old wrong code cannot processed without errors. Mainly the error message is very cryptic and for the normal user hard to understand. TEX provides no way to catch the error caused by `\csname` or allows to support the user with a descriptive error message. Therefore the experienced user had to enable this behaviour by an option `exactdef` in previous versions less or equal 6.50.

`\edef` This version uses this standard form for expansion. It is stronger than LATEX's `\protected@edef`. So the font encoding mechanism works and the glyph commands are converted to the correct tokens for PDF strings whith the definitions of the PD1 encoding. Because the protecting mechanism of LATEX doesn't work within an `\edef`, there are situations thinkable where code can break. For example, assignments and definitions aren't performed and so undefined command errors or argument parsing errors can occur. But this is only a compatibility problem with old texts. Now there are possibilities to write code that gives correct PDF strings (see `\texorpdfstring`). In the most cases unexpandable commands and tokens (math shift, grouping characters) remains. They don't cause an error like with `\csname`. However a PDF reader isn't TEX, so these tokens are viewed verbatim. So this version detects them now, and removes them with an descriptive warning for the user. As additional features xspace support is possible and grouping characters can be used without problems, because they are removed silently.

Generic messages. While expanding via `\xdef` the `\Generic...` messages don't work and causes problems (error messages, invalid `.out` file). So they are disabled while expanding and removed silently, because a user warning would be too expensive (memory and runtime, `\pdfstringdef` is slow enough).

```
\begingroup
  \let\GenericError\@gobblefour
  \let\GenericWarning\@gobbletwo
  \let\GenericInfo\@gobbletwo
```

Package french. This fix only works, if `\GenericError` is disabled.

```
  \ifx\nofrenchguillemets\@undefined
  \else
    \nofrenchguillemets
  \fi
```

Definition commands and expansion. Redefining the defining commands (see sec. 6.5.10). The original meaning of `\xdef` is saved in `\Hy@temp`.

```
  \let\Hy@temp\xdef
  \let\def\HyPsd@DefCommand
  \let\gdef\HyPsd@DefCommand
  \let\edef\HyPsd@DefCommand
  \let\xdef\HyPsd@DefCommand
  \let\futurelet\HyPsd@LetCommand
  \let\let\HyPsd@LetCommand
  \Hy@temp#1{#2}%
\endgroup
```

6.2.3 Postprocessing

If the string is empty time can be saved by omitting the postprocessing process.

```
\ifx#1\@empty
\else
```

Protecting spaces and removing grouping characters. In order to check the tokens we must separate them. This will be done with TEX's argument parsing. With this method we must the following item takes into account, that makes makes things a litte more complicate:

- TEX does not accept a space as an undelimited argument, it cancels space tokens while looking for an undelimited argument. Therefore we must protect the spaces now.
- An argument can be a single token or a group of many tokens. And within curly braces tokens aren't find by TEX's argument scanning process. Third curly braces as grouping characters cannot be expanded further, so they don't vanish by the string expansion above. So these characters with catcode 1 and 2 are removed in the following and replaced by an marker for the xspace support.
- TEX silently removes the outmost pair of braces of an argument. To prevent this on unwanted places, in the following the character | is appended to the string to make an outer brace to an inner one.

First the top level spaces are protected by replacing. Then the string is scanned to detect token groups. Each token group will now be space protected and again scanned for another token groups.

```
    \HyPsd@ProtectSpaces#1%
    \let\HyPsd@String\@empty
    \expandafter\HyPsd@RemoveBraces\expandafter{#1|}%
    \global\let#1\HyPsd@String
```

Check tokens. After removing the spaces and the grouping characters the string now should only consists of the following tokens/catcodes:

0 command names with start with an escape character.
3 math shift
4 alignment tabs
6 parameter, but this is unlikely.
7 superscript
8 subscript
11 letter
12 other
13 commands that are active characters.

After `\HyPsd@CheckCatcodes` the command `\HyPsd@RemoveMask` is reused to remove the group protection character |. This character is needed to ensure that the string at least consists of one token if `\HyPsd@CheckCatcodes` is called.

Because of internal local assignments and tabulars group braces are used.

```
    \let\HyPsd@SPACEOPTI\relax
    {%
       \let\HyPsd@String\@empty
       \expandafter\HyPsd@CheckCatcodes#1\HyPsd@End
       \global\let#1\HyPsd@String
    }%
    \expandafter\HyPsd@RemoveMask\expandafter
      |\expandafter\@empty#1\HyPsd@End#1%
```

\HyPsd@CheckCatcodes should no have removed the tokens with catcode 3, 4, 7, and 8. Because a parameter token (6) would cause to many errors before, there should now be only tokens with catcodes 11 or 12. So I think there is no need for a safety step like:

```
\xdef#1{\expandafter\strip@prefix\meaning#1}%
```

Looking for wrong glyphs. The case that glyphs aren't defined in the PD1 encoding is caught above in such a way, that the glyph name and a marker is inserted into the string. Now we can safely scan the string for this marker and provide a descriptive warning.

```
    \expandafter\HyPsd@Subst\expandafter{\HyPsd@GLYPHERR}{\relax}#1%
    \let\HyPsd@String\@empty
    \expandafter\HyPsd@GlyphProcess#1\relax\@empty
    \global\let#1\HyPsd@String
```

Backslash. The double backslash disturbs parsing octal sequenzes, for example in an string like abc\\051 the sequence \051 is detected although the second \ belongs to the first backslash.

```
    \HyPsd@StringSubst{\\}{\textbackslash}#1%
```

Spaces. All spaces have already the form \040. The last postprocessing step will be an optimizing of the spaces, so we already introduce already the necessary command \HyPsd@SPACEOPTI. But first it is defined to be \relax in order to prevent a too early expansion by an \edef. Secondly a \relax serves as a marker for a token that is detected by \xspace.

The code of frenchb.ldf can produce an additional space before \guillemotright, because \lastskip and \unskip do not work. Therefore it is removed here.

```
    \ifHy@unicode
      \expandafter\HyPsd@StringSubst\csname 80\040\endcsname
        \HyPsd@SPACEOPTI#1%
      \edef\Hy@temp@A{\HyPsd@SPACEOPTI\HyPsd@SPACEOPTI\80\273}%
      \expandafter\HyPsd@Subst\expandafter{\Hy@temp@A}%
        {\HyPsd@SPACEOPTI\80\273}#1%
    \else
      \HyPsd@StringSubst{\040}\HyPsd@SPACEOPTI#1%
      \expandafter\HyPsd@Subst\expandafter{%
        \expandafter\HyPsd@SPACEOPTI\expandafter\HyPsd@SPACEOPTI
        \string\273}{\HyPsd@SPACEOPTI\273}#1%
    \fi
```

Right parenthesis. Also \xspace detects a right parenthesis. For the \xspace support and the following parenthesis check the different parenthesis notations), \), and \051 are converted to one type \) and before \HyPsd@empty with the meaning of \relax is introduced for \xspace. By redefining to \@empty \HyPsd@empty can easily removed later.

```
    \ifHy@unicode
      \HyPsd@StringSubst{\)}{\80\051}#1%
      \HyPsd@Subst){\80\051}#1%
      \let\HyPsd@empty\relax
      \expandafter\HyPsd@StringSubst\csname 80\051\endcsname
        {\HyPsd@empty\80\051}#1%
    \else
      \HyPsd@StringSubst{\)}{\051}#1%
      \HyPsd@Subst){\051}#1%
      \let\HyPsd@empty\relax
```

```
562       \HyPsd@StringSubst{\051}{\HyPsd@empty\string\)}#1%
563     \fi
```

Support for package `xspace`**.** `\xspace` looks for the next token and decides if it expands to a space or not. Following tokens prevent its transformation to a space: Beginning and end of group, handled above by replacing by an italic correction, several punctuation marks, a closing parentheses, and several spaces.

Without package `xspace` there are tokens with catcode 11 and 12, `\HyPsd@empty` and `\HyPsd@SPACEOPTI`. With package `xspace` marker for the italic correction `\/` and `\xspace` come with. In the package `xspace` case the two markers are replaced by commands and an `\edef` performs the `\xspace` processing.

In the opposite of the original `\xspace` `\HyPsd@xspace` uses an argument instead of a `\futurelet`, so we have to provide such an argument, if `\HyPsd@xspace` comes last. Because `\HyPsd@Subst` with several equal tokens (`--`) needs a safe last token, in both cases the string gets an additional `\HyPsd@empty`.

```
564     \expandafter\HyPsd@Subst\expandafter{\/}\HyPsd@empty#1%
565     \@ifundefined{@xspace}{%
566     }{%
567       \let\HyPsd@xspace\relax
568       \expandafter\HyPsd@Subst\expandafter
569         {\HyPsd@XSPACE}\HyPsd@xspace#1%
570       \let\HyPsd@xspace\HyPsd@doxspace
571     }%
572     \xdef#1{#1\HyPsd@empty}%
```

Ligatures. TEX forms ligatures in its stomach, but the PDF strings are treated only by TEX's mouth. The PDFDocEncoding contains some ligatures, but the current version 3 of the AcrobatReader lacks the `fi` and `fl` glyphs, and the Linux version lacks the `emdash` and `endash` glyphs. So the necessary code is provided here, but currently disabled, hoping that version 4 of the AcrobatReader is better. To break the ligatures the user can use an empty group, because it leads to an insertion of an `\HyPsd@empty`. If this ligature code will be enabled some day, then the italic correction should also break the ligatures. Currently this occurs only, if package `xspace` is loaded.

```
573 %     \HyPsd@Subst{---}\textemdash#1%
574 %     \HyPsd@Subst{--}\textendash#1%
575 %     \HyPsd@Subst{fi}\textfi#1%
576 %     \HyPsd@Subst{fl}\textfl#1%
577     \HyPsd@Subst{!`}\textexclamdown#1%
578     \HyPsd@Subst{?`}\textquestiondown#1%
```

With the next `\edef` we get rid of the token `\HyPsd@empty`.

```
579     \let\HyPsd@empty\@empty
```

Left parentheses. Left parentheses are now converted to safe forms to avoid problems with unmatched ones (`\(` with PDFDocEncoding, the octal sequence with Unicode.

An optimization is possible. Matched parentheses can replaced by a `()` pair. But this code is removed to save TEX memory and time.

```
580     \ifHy@unicode
581       \HyPsd@StringSubst\(\textparenleft#1%
582       \HyPsd@Subst(\textparenleft#1%
583     \else
584       \HyPsd@StringSubst\({\050}#1%
585       \HyPsd@Subst({\050}#1%
586       \HyPsd@StringSubst{\050}{\string\(}#1%
```

```
    \fi
```

Optimizing spaces. Spaces are often used, but they have a very long form `\040`. They are converted back to real spaces, but not all, so that no space follows after another. In the bookmark case several spaces are written to the `.out` file, but if the entries are read back, several spaces are merged to a single one.

With Unicode the spaces are replaced by their octal sequences.

```
    \ifHy@unicode
      \edef\HyPsd@SPACEOPTI{\80\040}%
    \else
      \let\HyPsd@SPACEOPTI\HyPsd@spaceopti
    \fi
    \xdef#1{#1\@empty}%
  \fi
```

Converting to Unicode. At last the eight bit letters have to be converted to Unicode, the masks `\8` and `\9` are removed and the Unicode marker is added.

```
  \ifHy@unicode
    \HyPsd@ConvertToUnicode#1%
  \fi
```

User hook. The hook `\pdfstringdefPostHook` can be used for the purpose to post-process the string further.

```
  \pdfstringdefPostHook#1%
\endgroup
}
```

6.3 Encodings

6.3.1 PD1 encoding

The PD1 encoding implements the PDFDocEncoding for use with LaTeX 2_ε's NFSS. Because the informational strings are not set by TeX's typesetting mechanism but for interpreting by the PDF reader, the glyphs of the PD1 encoding are implemented to be safely written to a file (PDF output file, `.out` file).

The PD1 encoding can be specified as an option of the 'fontenc' package or loaded here. It does not matter what font family is selected, as TeX does not process it anyway. So use CM.

```
\@ifundefined{T@PD1}{\input{pd1enc.def}}{}
\DeclareFontFamily{PD1}{pdf}{}
\DeclareFontShape{PD1}{pdf}{m}{n}{ <-> cmr10 }{}
\DeclareFontSubstitution{PD1}{pdf}{m}{n}
```

6.3.2 PU encoding

The PU encoding implements the Unicode encoding for use with LaTeX's NFSS. Because of large memory requirements the encoding file for Unicode support is only loaded, if option `unicode` is specified as package option.

`\HyPsd@InitUnicode` Because the file `puenc.def` takes a lot of memory, the loading is defined in the macro `\HyPsd@InitUnicode` called by the package option `unicode`.

```
\def\HyPsd@InitUnicode{%
  \@ifundefined{T@PU}{\input{puenc.def}}{}%
  \DeclareFontFamily{PU}{pdf}{}%
```

```
  \DeclareFontShape{PU}{pdf}{m}{n}{ <-> cmr10 }{}%
  \DeclareFontSubstitution{PU}{pdf}{m}{n}%
  \let\HyPsd@InitUnicode\relax
}
```

6.4 Additional user commands

6.4.1 \texorpdfstring

\texorpdfstring

While expanding the string in \pdfstringdef the switch \ifHy@pdfstring is set. This is used by the full expandible macro \texorpdfstring. It expects two arguments, the first contains the string that will be set and processed by TEX's stomach, the second contains the replacement for PDF strings.

```
\newcommand*{\texorpdfstring}{%
  \ifHy@pdfstring
    \expandafter\@secondoftwo
  \else
    \expandafter\@firstoftwo
  \fi
}
```

6.4.2 Hooks for \pdfstringdef

\pdfstringdefPreHook
\pdfstringdefPostHook

Default definition of the hooks for \pdfstringdef. The construct \@ifundefined with \let is a little bit faster than \providecommand.

```
\@ifundefined{pdfstringdefPreHook}{%
  \let\pdfstringdefPreHook\@empty
}{}
\@ifundefined{pdfstringdefPostHook}{%
  \let\pdfstringdefPostHook\@gobble
}{}
```

\pdfstringdefDisableCommands

In \pdfstringdefPreHook the user can add code that is executed before the string, that have to be converted by \pdfstringdef, is expanded. So replacements for problematic macros can be given. The code in \pdfstringdefPreHook should not be replaced perhaps by an \renewcommand, because a previous meaning gets lost.

Macro \pdfstringdefDisableCommands avoids this, because it reuses the old meaning of the hook and appends the new code to \pdfstringdefPreHook, e.g.:

```
\pdfstringdefDisableCommands{%
  \let~\textasciitilde
  \def\url{\pdfstringdefWarn\url}%
  \let\textcolor\@gobble
}%
```

In the argument of \pdfstringdefDisableCommands the character @ can be used in command names. So it is easy to use useful LATEX commands like \@gobble or \@firstofone.

```
\def\pdfstringdefDisableCommands{%
  \begingroup
    \makeatletter
    \HyPsd@DisableCommands
}
```

\HyPsd@DisableCommands

```
\long\def\HyPsd@DisableCommands#1{%
```

```
    \toks0=\expandafter{\pdfstringdefPreHook}%
    \toks1={#1}%
    \xdef\pdfstringdefPreHook{\the\toks0 \the\toks1}%
  \endgroup
}
```

\pdfstringdefWarn The purpose of \pdfstringdefWarn is to produce a warning message, so the user can see, that something can go wrong with the conversion to PDF strings.

The prefix \<>- is added to the token. \noexpand protects the probably undefined one during the first expansion step. Then \HyPsd@CheckCatcodes can detect the not allowed token, \HyPsd@CatcodeWarning prints a warning message, after \HyPsd@RemovePrefix has removed the prefix.

\pdfstringdefWarn is intended for document authors or package writers, examples for use can be seen in the definition of \HyPsd@ifnextchar or \HyPsd@protected@testopt.

```
\def\pdfstringdefWarn#1{%
  \expandafter\noexpand\csname<>-\string#1\endcsname
}
```

6.5 Help macros for expansion

6.5.1 Babel languages

```
\newif\ifHy@next
```

Nothing to do for english.

```
\@ifpackagewith{babel}{danish}{%
  \def\HyPsd@babel@danish{%
    \declare@shorthand{danish}{"|}{}%
    \declare@shorthand{danish}{"~}{-}%
  }%
}{}
\Hy@nextfalse
\@ifpackagewith{babel}{dutch}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{afrikaans}{\Hy@nexttrue}{}%
\ifHy@next
  \def\HyPsd@babel@dutch{%
    \declare@shorthand{dutch}{"|}{}%
    \declare@shorthand{dutch}{"~}{-}%
  }%
\fi
\@ifpackagewith{babel}{finnish}{%
  \def\HyPsd@babel@finnish{%
    \declare@shorthand{finnish}{"|}{}%
  }%
}{}
\Hy@nextfalse
\@ifpackagewith{babel}{frenchb}{\Hy@nexttrue}{}
\@ifpackagewith{babel}{francais}{\Hy@nexttrue}{}
\ifHy@next
  \def\HyPsd@babel@frenchb{%
    \def\guill@spacing{ }%
  }%
\fi
\Hy@nextfalse
\@ifpackagewith{babel}{german}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{germanb}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{austrian}{\Hy@nexttrue}{}%
```

```
\ifHy@next
  \def\HyPsd@babel@german{%
    \declare@shorthand{german}{"f}{f}%
    \declare@shorthand{german}{"|}{}%
    \declare@shorthand{german}{"~}{-}%
  }%
\fi
\Hy@nextfalse
\@ifpackagewith{babel}{ngerman}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{ngermanb}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{naustrian}{\Hy@nexttrue}{}%
\ifHy@next
  \def\HyPsd@babel@ngerman{%
    \declare@shorthand{german}{"|}{}%
    \declare@shorthand{german}{"~}{-}%
  }%
\fi
\Hy@nextfalse
\@ifpackagewith{babel}{usorbian}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{uppersorbian}{\Hy@nexttrue}{}%
\ifHy@next
  \def\HyPsd@babel@usorbian{%
    \declare@shorthand{usorbian}{"f}{f}%
    \declare@shorthand{usorbian}{"|}{}%
  }%
\fi
\Hy@nextfalse
\@ifpackagewith{babel}{brazil}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{brazilian}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{portuges}{\Hy@nexttrue}{}%
\@ifpackagewith{babel}{portuguese}{\Hy@nexttrue}{}%
\ifHy@next
  \def\HyPsd@babel@portuges{%
    \declare@shorthand{portuges}{"|}{}%
  }%
\fi
\Hy@nextfalse
\@ifpackagewith{babel}{russian}{\Hy@nexttrue}{}
\@ifpackagewith{babel}{russianb}{\Hy@nexttrue}{}
\ifHy@next
  \def\HyPsd@babel@russian{%
    \declare@shorthand{russian}{"|}{}%
    \declare@shorthand{russian}{"~}{-}%
  }%
\fi
\Hy@nextfalse
\@ifpackagewith{babel}{ukrainian}{\Hy@nexttrue}{}
\@ifpackagewith{babel}{ukraineb}{\Hy@nexttrue}{}
\ifHy@next
  \def\HyPsd@babel@ukrainian{%
    \declare@shorthand{ukrainian}{"|}{}%
    \declare@shorthand{ukrainian}{"~}{-}%
  }%
\fi
\@ifpackagewith{babel}{macedonian}{%
  \def\HyPsd@babel@macedonian{%
    \declare@shorthand{macedonian}{"|}{}%
```

```
    \declare@shorthand{macedonian}{"~}{-}%
  }%
}{}
\@ifpackagewith{babel}{slovene}{%
  \def\HyPsd@babel@slovene{%
    \declare@shorthand{slovene}{"|}{}%
  }%
}{}
\@ifpackagewith{babel}{swedish}{%
  \def\HyPsd@babel@swedish{%
    \declare@shorthand{swedish}{"|}{}%
    \declare@shorthand{swedish}{"~}{-}%
  }%
}{}
```

6.5.2 CJK bookmarks

\HyPsd@CJKhook

Some internal commands of package cjk are redefined to avoid error messages. For a rudimental support of CJK bookmarks the active characters are redefined so that they print themselves.

After preprocessing of Big5 encoded data the following string for a double-byte character is emitted:

```
^^7f<arg1>^^7f<arg2>^^7f
```

`<arg1>` is the first byte in the range (always $>$ 0x80); `<arg2>` is the second byte in decimal notation ($\geq$ 0x40).

```
\begingroup
  \catcode"7F=\active
  \toks@{%
    \let\CJK@ignorespaces\empty
    \def\CJK@char#1{\@gobbletwo}%
    \let\CJK@charx\@gobblefour
    \let\CJK@punctchar\@gobblefour
    \def\CJK@punctcharx#1{\@gobblefour}%
    \catcode"7F=\active
    \def^^7f#1^^7f#2^^7f{%
      \string #1\HyPsd@DecimalToOctal{#2}%
    }%
    % ... ?
    \ifHy@unicode
      \def\Hy@cjkpu{\80}%
    \else
      \let\Hy@cjkpu\@empty
    \fi
    \HyPsd@CJKActiveChars
  }%
  \count@=127
  \@whilenum\count@<255 \do{%
    \advance\count@ by 1
    \lccode`\~=\count@
    \lowercase{%
      \toks@\expandafter{\the\toks@ ~}%
    }%
  }%
  \toks@\expandafter{\the\toks@ !}%
  \xdef\HyPsd@CJKhook{\the\toks@}%
\endgroup
```

\HyPsd@CJKActiveChars The macro \HyPsd@CJKActiveChars is only defined to limit the memory consumption of \HyPsd@CJKhook.

```
\def\HyPsd@CJKActiveChars#1{%
  \ifx#1!%
    \let\HyPsd@CJKActiveChars\relax
  \else
    \edef#1{\noexpand\Hy@cjkpu\string#1}%
  \fi
  \HyPsd@CJKActiveChars
}
```

\HyPsd@DecimalToOctal A character, given by the decimal number is converted to a PDF character.

```
\def\HyPsd@DecimalToOctal#1{%
  \ifcase #1 %
        \000\or \001\or \002\or \003\or \004\or \005\or \006\or \007%
    \or \010\or \011\or \012\or \013\or \014\or \015\or \016\or \017%
    \or \020\or \021\or \022\or \023\or \024\or \025\or \026\or \027%
    \or \030\or \031\or \032\or \033\or \034\or \035\or \036\or \037%
    \or \040\or \041\or \042\or \043\or \044\or \045\or \046\or \047%
    \or \050\or \051\or \052\or \053\or \054\or \055\or \056\or \057%
    \or    0\or    1\or    2\or    3\or    4\or    5\or    6\or    7%
    \or    8\or    9\or \072\or \073\or \074\or \075\or \076\or \077%
    \or    @\or    A\or    B\or    C\or    D\or    E\or    F\or    G%
    \or    H\or    I\or    J\or    K\or    L\or    M\or    N\or    O%
    \or    P\or    Q\or    R\or    S\or    T\or    U\or    V\or    W%
    \or    X\or    Y\or    Z\or \133\or \134\or \135\or \136\or \137%
    \or \140\or    a\or    b\or    c\or    d\or    e\or    f\or    g%
    \or    h\or    i\or    j\or    k\or    l\or    m\or    n\or    o%
    \or    p\or    q\or    r\or    s\or    t\or    u\or    v\or    w%
    \or    x\or    y\or    z\or \173\or \174\or \175\or \176\or \177%
    \or \200\or \201\or \202\or \203\or \204\or \205\or \206\or \207%
    \or \210\or \211\or \212\or \213\or \214\or \215\or \216\or \217%
    \or \220\or \221\or \222\or \223\or \224\or \225\or \226\or \227%
    \or \230\or \231\or \232\or \233\or \234\or \235\or \236\or \237%
    \or \240\or \241\or \242\or \243\or \244\or \245\or \246\or \247%
    \or \250\or \251\or \252\or \253\or \254\or \255\or \256\or \257%
    \or \260\or \261\or \262\or \263\or \264\or \265\or \266\or \267%
    \or \270\or \271\or \272\or \273\or \274\or \275\or \276\or \277%
    \or \300\or \301\or \302\or \303\or \304\or \305\or \306\or \307%
    \or \310\or \311\or \312\or \313\or \314\or \315\or \316\or \317%
    \or \320\or \321\or \322\or \323\or \324\or \325\or \326\or \327%
    \or \330\or \331\or \332\or \333\or \334\or \335\or \336\or \337%
    \or \340\or \341\or \342\or \343\or \344\or \345\or \346\or \347%
    \or \350\or \351\or \352\or \353\or \354\or \355\or \356\or \357%
    \or \360\or \361\or \362\or \363\or \364\or \365\or \366\or \367%
    \or \370\or \371\or \372\or \373\or \374\or \375\or \376\or \377%
  \fi
}
```

6.5.3 \@inmathwarn-Patch

\HyPsd@inmathwarn The patch of \@inmathwarn is needed to get rid of the infinite error loop with glyphs of other encodings (see the explanation above). Potentially the patch is dangerous, if the code in ltoutenc.dtx changes. Checked with LaTeX 2_ε versions [1998/06/01] and [1998/12/01]. I expect that versions below [1995/12/01] don't work.

To understand the patch easier, the original code of \@current@cmd and \@changed@cmd

follows (LaTeX 2_ε release [1998/12/01]). In the normal case `\pdfstringdef` is executed in a context where `\protect` has the meaning of `\@typesetprotect` (=`\relax`).

```
\def\@current@cmd#1{%
   \ifx\protect\@typeset@protect
      \@inmathwarn#1%
   \else
      \noexpand#1\expandafter\@gobble
   \fi}
\def\@changed@cmd#1#2{%
   \ifx\protect\@typeset@protect
      \@inmathwarn#1%
      \expandafter\ifx\csname\cf@encoding\string#1\endcsname\relax
         \expandafter\ifx\csname ?\string#1\endcsname\relax
            \expandafter\def\csname ?\string#1\endcsname{%
               \TextSymbolUnavailable#1%
            }%
         \fi
         \global\expandafter\let
               \csname\cf@encoding \string#1\expandafter\endcsname
               \csname ?\string#1\endcsname
      \fi
      \csname\cf@encoding\string#1%
         \expandafter\endcsname
   \else
      \noexpand#1%
   \fi}
\gdef\TextSymbolUnavailable#1{%
   \@latex@error{%
      Command \protect#1 unavailable in encoding \cf@encoding%
   }\@eha}
\def\@inmathwarn#1{%
   \ifmmode
      \@latex@warning{Command \protect#1 invalid in math mode}%
   \fi}
```

```
\def\HyPsd@inmathwarn#1#2{%
  \ifx#2\expandafter
    \expandafter\ifx\csname\cf@encoding\string#1\endcsname\relax
      \HyPsd@GLYPHERR
      \expandafter\@gobble\string#1%
      >%
      \expandafter\expandafter\expandafter\HyPsd@EndWithElse
    \else
      \expandafter\expandafter\expandafter\HyPsd@GobbleFiFi
    \fi
  \else
    \expandafter#2%
  \fi
}
\def\HyPsd@GobbleFiFi#1\fi#2\fi{}
\def\HyPsd@EndWithElse#1\else{\else}
```

6.5.4 `\add@accent`-Patch

Unknown composite characters are built with `\add@accent`, so it is redefined to provide a warning.

\HyPsd@add@accent

```
\def\HyPsd@add@accent#1#2{%
  \HyPsd@GLYPHERR\expandafter\@gobble\string#1+\string#2>%
  #2%
}%
```

6.5.5 Unexpandable spaces

\HyPsd@LetUnexpandableSpace

In \HyPsd@@ProtectSpaces the space tokens are replaced by not expandable commands, that work like spaces:

- So they can caught by undelimited arguments.
- And they work in number, dimen, and skip assignments.

These properties are used in \HyPsd@CheckCatcodes.

```
\def\HyPsd@LetUnexpandableSpace#1{%
  \expandafter\futurelet\expandafter#1\expandafter\@gobble\space\relax
}
```

\HyPsd@UnexpandableSpace

\HyPsd@UnexpandableSpace is used in \HyPsd@@ProtectSpaces. In \yPsd@@ProtectSpaces the space tokens are replaced by unexpandable commands \HyPsd@UnexpandableSpace, but that have the effect of spaces.

```
\HyPsd@LetUnexpandableSpace\HyPsd@UnexpandableSpace
```

6.5.6 Marker for commands

\HyPsd@XSPACE
\HyPsd@ITALCORR
\HyPsd@GLYPHERR

Some commands and informations cannot be utilized before the string expansion and the checking process. Command names are filtered out, so we need another way to transport the information: An unusual # with catcode 12 marks the beginning of the extra information.

```
\edef\HyPsd@XSPACE{\string#\string X}
\edef\HyPsd@ITALCORR{\string#\string I}
\edef\HyPsd@GLYPHERR{\string#\string G}
```

6.5.7 \hspace fix

\HyPsd@hspace

```
\def\HyPsd@hspace#1{\HyPsd@@hspace#1*\END}
```

\HyPsd@@hspace

\HyPsd@@hspace checks whether \hspace is called in its star form.

```
\def\HyPsd@@hspace#1*#2\END{%
  \ifx\\#2\\%
    \HyPsd@hspacetest{#1}%
  \else
    \expandafter\HyPsd@hspacetest
  \fi
}
```

\HyPsd@hspacetest

\HyPsd@hyspacetest replaces the \hspace by a space, if the length is greater than zero.

```
\def\HyPsd@hspacetest#1{\ifdim#1>\z@\space\fi}
```

6.5.8 Fix for AMS classes

```
\@ifundefined{tocsection}{%
  \let\HyPSD@AMSclassfix\relax
}{%
  \def\HyPSD@AMSclassfix{%
    \let\tocpart\HyPSD@tocsection
    \let\tocchapter\HyPSD@tocsection
    \let\tocappendix\HyPSD@tocsection
    \let\tocsection\HyPSD@tocsection
    \let\tocsubsection\HyPSD@tocsection
    \let\tocsubsubsection\HyPSD@tocsection
    \let\tocparagraph\HyPSD@tocsection
  }%
  \def\HyPSD@tocsection#1#2#3{%
    \if @#2@\else\if @#1@\else#1 \fi#2. \fi
    #3%
  }%
}
```

6.5.9 Reference commands

`\HyPsd@ref` Macro `\HyPsd@ref` calls the macro `\HyPsd@@ref` for star checking. The same methods like in `\HyPsd@hspace` is used.

```
\def\HyPsd@ref#1{\HyPsd@@ref#1*\END}%
```

`\HyPsd@@ref` Macro `\HyPsd@@ref` checks if a star is present.

```
\def\HyPsd@@ref#1*#2\END{%
  \ifx\\#2\\%
    \HyPsd@@@ref{#1}%
  \else
    \expandafter\HyPsd@@@ref
  \fi
}%
```

`\HyPsd@@@ref` `\HyPsd@@@ref` does the work and extracts the first argument.

```
\def\HyPsd@@@ref#1{%
  \expandafter\ifx\csname r@#1\endcsname\relax
    ??%
  \else
    \expandafter\expandafter\expandafter\@car\csname r@#1\endcsname\@nil
  \fi
}
```

`\HyPsd@pageref` Macro `\HyPsd@pageref` calls the macro `\HyPsd@@pageref` for star checking. The same methods like in `\HyPsd@hspace` is used.

```
\def\HyPsd@pageref#1{\HyPsd@@pageref#1*\END}
```

`\HyPsd@@pageref` Macro `\HyPsd@@pageref` checks if a star is present.

```
\def\HyPsd@@pageref#1*#2\END{%
  \ifx\\#2\\%
    \HyPsd@@@pageref{#1}%
  \else
    \expandafter\HyPsd@@@pageref
  \fi
}
```

\HyPsd@@@pageref

\HyPsd@@@pageref does the work and extracts the second argument.

```
\def\HyPsd@@@pageref#1{%
  \expandafter\ifx\csname r@#1\endcsname\relax
    ??%
  \else
    \expandafter\expandafter\expandafter\expandafter
    \expandafter\expandafter\expandafter\@car
    \expandafter\expandafter\expandafter\@gobble
    \csname r@#1\endcsname\@nil
  \fi
}
```

6.5.10 Redefining the defining commands

Definitions aren't allowed, because they aren't executed in an only expanding context. So the command to be defined isn't defined and can perhaps be undefined. This would causes TeX to stop with an error message. With a deep trick it is possible to define commands in such a context: \csname does the job, it defines the command to be \relax, if it has no meaning.

Active characters cannot be defined with this trick. It is possible to define all undefined active characters (perhaps that they have the meaning of \relax). To avoid side effects this should be done in \pdfstringdef shortly before the \xdef job. But checking and defining all possible active characters of the full range (0 until 255) would take a while. \pdfstringdef is slow enough, so this isn't done.

\HyPsd@DefCommand and \HyPsd@LetCommand expands to the commands \<def>-command and \<let>-command with the meaning of \def and \let. So it is detected by \HyPsd@CheckCatcodes and the command name \<def>-command or \<let>-command should indicate a forbidden definition command.

The command to be defined is converted to a string and back to a command name with the help of \csname. If the command is already defined, \noexpand prevents a further expansion, even though the command would expand to legal stuff. If the command don't have the meaning of \relax, \HyPsd@CheckCatcodes will produce a warning. (The command itself can be legal, but the warning is legitimate because of the position after a defining command.)

The difference between \HyPsd@DefCommand and \HyPsdLetCommand is that the first one also cancels this arguments, the parameter and definition text. The right side of the \let commands cannot be canceled with an undelimited parameter because of a possible space token after \futurelet.

To avoid unmachted \if... tokens, the cases \let\if...\iftrue and \let\if...\iffalse are checked and ignored.

\HyPsd@DefCommand
\HyPsd@LetCommand

```
\begingroup
  \def\x#1#2{%
    \endgroup
    \let#1\def
    \def\HyPsd@DefCommand##1##2##{%
      #1%
      \expandafter\noexpand
        \csname\expandafter\@gobble\string##1\@empty\endcsname
      \@gobble
    }%
    \let#2\let
    \def\HyPsd@@LetCommand##1{%
```

```
      \expandafter\ifx\csname##1\expandafter\endcsname
                      \csname iftrue\endcsname
        \pdfstringdefWarn\let
        \expandafter\@gobble
      \else
        \expandafter\ifx\csname##1\expandafter\endcsname
                        \csname iffalse\endcsname
          \pdfstringdefWarn\let
          \expandafter\expandafter\expandafter\@gobble
        \else
          #2%
          \expandafter\noexpand
            \csname##1\expandafter\expandafter\expandafter\endcsname
        \fi
      \fi
    }%
  }%
\expandafter\x\csname <def>-command\expandafter\endcsname
               \csname <let>-command\endcsname
\def\HyPsd@LetCommand#1{%
  \expandafter\expandafter\expandafter\HyPsd@@LetCommand
    \expandafter\expandafter\expandafter{%
    \expandafter\@gobble\string#1\@empty
  }%
}
```

6.5.11 \ifnextchar

\HyPsd@ifnextchar

In \pdfstringdef \@ifnextchar is disabled via a \let command to save time. First a warning message is given, then the three arguments are canceled. \@ifnextchar cannot work in a correct manner, because it uses \futurelet, but this is a stomach feature, that doesn't work in an expanding context.

```
\def\HyPsd@ifnextchar{%
  \pdfstringdefWarn\@ifnextchar
  \expandafter\@gobbletwo\@gobble
}
```

\HyPsd@new@ifnextchar

Package amsgen.sty redefines \@ifstar using \new@ifnextchar instead of \@ifnextchar. See bug report latex/3662.

```
\def\HyPsd@new@ifnextchar{%
  \pdfstringdefWarn\new@ifnextchar
  \expandafter\@gobbletwo\@gobble
}
```

6.5.12 \@protected@testoptifnextchar

\HyPsd@protected@testopt

Macros with optional arguments doesn't work properly, because they call \@ifnextchar to detect the optional argument (see the explanation of \HyPsd@ifnextchar). But a warning, that \@ifnextchar doesn't work, doesn't help the user very much. Therefore \@protected@testopt is also disabled, because its first argument is the problematic macro with the optional argument and it is called before \@ifnextchar.

```
\def\HyPsd@protected@testopt#1{%
  \pdfstringdefWarn#1%
  \@gobbletwo
}
```

6.6 Help macros for postprocessing

6.6.1 Generic warning.

\HyPsd@Warning For several reasons \space is masked and does not have its normal meaning. But it is used in warning messages, so it is redefined locally:

```
\def\HyPsd@Warning#1{%
  \begingroup
    \def\space{ }%
    \Hy@Warning{#1}%
  \endgroup
}
```

6.6.2 Protecting spaces

\HyPsd@ProtectSpaces \HyPsd@ProtectSpaces calls with the expanded string \HyPsd@@ProtectSpaces. The expanded string is protected by | at the beginning and end of the expanded string. Because of this there can be no group at the beginning or end of the string and grouping characters are not removed by the call of \HyPsd@@ProtectSpaces.

```
\def\HyPsd@ProtectSpaces#1{%
  \expandafter\HyPsd@@ProtectSpaces
    \expandafter|\expandafter\@empty#1| \HyPsd@End#1%
}
```

\HyPsd@@ProtectSpaces The string can contain command tokens, so it is better to use an \def instead of an \edef.

```
\def\HyPsd@@ProtectSpaces#1 #2\HyPsd@End#3{%
  \ifx\scrollmode#2\scrollmode
    \HyPsd@RemoveMask#1\HyPsd@End#3%
  \else
    \gdef#3{#1\HyPsd@UnexpandableSpace#2}%
    \Hy@ReturnAfterFi{%
      \expandafter\HyPsd@@ProtectSpaces#3\HyPsd@End#3%
    }%
  \fi
}
```

Remove mask.

\HyPsd@RemoveMask \HyPsd@RemoveMask removes the protecting |. It is used by \HyPsd@@ProtectSpaces and by the code in \pdfstringdef that removes the grouping chararcters.

```
\def\HyPsd@RemoveMask|#1|\HyPsd@End#2{%
  \toks@\expandafter{#1}%
  \xdef#2{\the\toks@}%
}
```

6.6.3 Remove grouping braces

\HyPsd@RemoveBraces #1 contains the expanded string, the result will be locally written in command \HyPsd@String.

```
\def\HyPsd@RemoveBraces#1{%
  \ifx\scrollmode#1\scrollmode
  \else
    \Hy@ReturnAfterFi{%
      \HyPsd@@RemoveBraces#1\HyPsd@End{#1}%
    }%
  \fi
}
```

\HyPsd@@RemoveBraces

\HyPsd@@RemoveBraces is called with the expanded string, the end marked by \HyPsd@End, the expanded string again, but enclosed in braces and the string command. The first expanded string is scanned by the parameter text #1#2. By a comparison with the original form in #3 we can decide whether #1 is a single token or a group. To avoid the case that #2 is a group, the string is extended by a | before.

While removing the grouping braces an italic correction marker is inserted for supporting package xspace and letting ligatures broken.

Because the string is already expanded, the \if commands should disappeared. So we can move some parts out of the argument of \Hy@ReturnAfterFi.

```
\def\HyPsd@@RemoveBraces#1#2\HyPsd@End#3{%
  \def\Hy@temp@A{#1#2}%
  \def\Hy@temp@B{#3}%
  \ifx\Hy@temp@A\Hy@temp@B
    \expandafter\def\expandafter\HyPsd@String\expandafter{%
      \HyPsd@String#1%
    }%
    \Hy@ReturnAfterElseFi{%
      \ifx\scrollmode#2\scrollmode
      \else
        \Hy@ReturnAfterFi{%
          \HyPsd@RemoveBraces{#2}%
        }%
      \fi
    }%
  \else
    \def\Hy@temp@A{#1}%
    \HyPsd@AppendItalcorr\HyPsd@String
    \Hy@ReturnAfterFi{%
      \ifx\Hy@temp@A\@empty
        \Hy@ReturnAfterElseFi{%
          \HyPsd@RemoveBraces{#2}%
        }%
      \else
        \Hy@ReturnAfterFi{%
          \HyPsd@ProtectSpaces\Hy@temp@A
          \HyPsd@AppendItalcorr\Hy@temp@A
          \expandafter\HyPsd@RemoveBraces\expandafter
            {\Hy@temp@A#2}%
        }%
      \fi
    }%
  \fi
}
```

\HyPsd@AppendItalcorr
\HyPsd@@AppendItalcorr

The string can contain commands yet, so it is better to use \def instead of a shorter \edef. The two help macros limit the count of \expandafter.

```
\def\HyPsd@AppendItalcorr#1{%
  \expandafter\HyPsd@@AppendItalcorr\expandafter{\/}#1%
}
\def\HyPsd@@AppendItalcorr#1#2{%
  \expandafter\def\expandafter#2\expandafter{#2#1}%
}
```

6.6.4 Catcode check

Check catcodes.

\HyPsd@CheckCatcodes Because \ifcat expands its arguments, this is prevented by \noexpand. In case of command tokens and active characters \ifcat now sees a \relax. After protecting spaces and removing braces #1 should be a single token, no group of several tokens, nor an empty group. (So the \expandafter\relax between \ifcat and \noexpand is only for safety and it should be possible to remove it.)

\protect and \relax should be removed silently. But it is too dangerous and breaks some code giving them the meaning of \@empty. So commands with the meaning of \protect are removed here. (\protect should have the meaning of \@typeset@protect that is equal to \relax).

```
\def\HyPsd@CheckCatcodes#1#2\HyPsd@End{%
  \global\let\HyPsd@Rest\relax
  \ifcat\relax\noexpand#1\relax
    \ifx#1\protect
    \else
      \ifx#1\penalty
        \setbox\z@=\hbox{%
          \afterassignment\HyPsd@AfterCountRemove
          \count@=#2\HyPsd@End
        }%
      \else
        \ifx#1\kern
          \setbox\z@=\hbox{%
            \afterassignment\HyPsd@AfterDimenRemove
            \dimen@=#2\HyPsd@End
          }%
        \else
          \ifx#1\hskip
            \setbox\z@=\hbox{%
              \afterassignment\HyPsd@AfterSkipRemove
              \skip@=#2\HyPsd@End
            }%
          \else
            \HyPsd@CatcodeWarning{#1}%
          \fi
        \fi
      \fi
    \fi
  \else
    \ifcat#1 %SPACE
      \expandafter\def\expandafter\HyPsd@String\expandafter{%
        \HyPsd@String\HyPsd@SPACEOPTI
      }%
    \else
      \ifcat$#1%
        \HyPsd@CatcodeWarning{math shift}%
      \else
        \ifcat&#1%
          \HyPsd@CatcodeWarning{alignment tab}%
        \else
          \ifcat^#1%
            \HyPsd@CatcodeWarning{superscript}%
          \else
            \ifcat_#1%
              \HyPsd@CatcodeWarning{subscript}%
            \else
              \expandafter\def\expandafter\HyPsd@String\expandafter{%
```

```
                \HyPsd@String#1%
              }%
            \fi
          \fi
        \fi
      \fi
    \fi
  \fi
  \ifx\HyPsd@Rest\relax
    \Hy@ReturnAfterElseFi{%
      \ifx\scrollmode#2\scrollmode
      \else
        \Hy@ReturnAfterFi{%
          \HyPsd@CheckCatcodes#2\HyPsd@End
        }%
      \fi
    }%
  \else
    \Hy@ReturnAfterFi{%
      \ifx\HyPsd@Rest\@empty
      \else
        \expandafter\HyPsd@CheckCatcodes\HyPsd@Rest\HyPsd@End
      \fi
    }%
  \fi
}
```

Remove counts, dimens, skips.

`\HyPsd@AfterCountRemove` Counts like `\penalty` are removed silently.

```
\def\HyPsd@AfterCountRemove#1\HyPsd@End{%
  \gdef\HyPsd@Rest{#1}%
}
```

`\HyPsd@AfterDimenRemove` If the value of the dimen (`\kern`) is zero, it can be removed silently. All other values are difficult to interpret. Negative values do not work in bookmarks. Should positive values be removed or should they be replaced by space(s)? The following code replaces positive values greater than `1ex` with a space and removes them else.

```
\def\HyPsd@AfterDimenRemove#1\HyPsd@End{%
  \ifdim\ifx\HyPsd@String\@empty\z@\else\dimen@\fi>1ex
    \HyPsd@ReplaceSpaceWarning{\string\kern\space\the\dimen@}%
    \gdef\HyPsd@Rest{\HyPsd@UnexpandableSpace #1}%
  \else
    \ifdim\dimen@=\z@
    \else
      \HyPsd@RemoveSpaceWarning{\string\kern\space\the\dimen@}%
    \fi
    \gdef\HyPsd@Rest{#1}%
  \fi
}
```

`\HyPsd@AfterSkipRemove` The glue part of skips do not work in PDF strings and are ignored. Skips (`\hskip`), that are not zero, have the same interpreting problems like dimens (see above).

```
\def\HyPsd@AfterSkipRemove#1\HyPsd@End{%
  \ifdim\ifx\HyPsd@String\@empty\z@\else\skip@\fi>1ex
    \HyPsd@ReplaceSpaceWarning{\string\hskip\space\the\skip@}%
```

```
    \gdef\HyPsd@Rest{\HyPsd@UnexpandableSpace #1}%
  \else
    \ifdim\skip@=\z@
    \else
      \HyPsd@RemoveSpaceWarning{\string\kern\space\the\skip@}%
    \fi
    \gdef\HyPsd@Rest{#1}%
  \fi
}
```

Catcode warnings.

\HyPsd@CatcodeWarning \HyPsd@CatcodeWarning produces a warning for the user.

```
\def\HyPsd@CatcodeWarning#1{%
  \HyPsd@Warning{%
    Token not allowed in a PDFDocEncoded string,%
    \MessageBreak removing `\HyPsd@RemoveCmdPrefix#1'%
  }%
}
\begingroup
  \catcode`\|=0
  \catcode`\\=12
  |gdef|HyPsd@RemoveCmdPrefix#1{%
    |expandafter|HyPsd@@RemoveCmdPrefix
      |string#1|@empty\<>-|@empty|@empty
  }%
  |gdef|HyPsd@@RemoveCmdPrefix#1\<>-#2|@empty#3|@empty{#1#2}%
|endgroup
```

\HyPsd@RemoveSpaceWarning

```
\def\HyPsd@RemoveSpaceWarning#1{%
  \HyPsd@Warning{%
    Token not allowed in a PDFDocEncoded string:%
    \MessageBreak #1\MessageBreak
    removed%
  }%
}
```

\HyPsd@ReplaceSpaceWarning

```
\def\HyPsd@ReplaceSpaceWarning#1{%
  \HyPsd@Warning{%
    Token not allowed in a PDFDocEncoded string:%
    \MessageBreak #1\MessageBreak
    replaced by space%
  }%
}
```

6.6.5 Check for wrong glyphs

A wrong glyph is marked with \relax, the glyph name follows, delimited by >. \@empty ends the string.

```
\def\HyPsd@GlyphProcess#1\relax#2\@empty{%
  \expandafter\def\expandafter\HyPsd@String\expandafter{%
    \HyPsd@String#1%
  }%
  \ifx\\#2\\%
```

```
  \else
    \Hy@ReturnAfterFi{%
      \HyPsd@GlyphProcessWarning#2\@empty
    }%
  \fi
}
\def\HyPsd@GlyphProcessWarning#1>#2\@empty{%
  \HyPsd@Warning{%
    Glyph not defined in %
    P\ifHy@unicode U\else D1\fi\space encoding,\MessageBreak
    removing `\@backslashchar#1'%
  }%
  \HyPsd@GlyphProcess#2\@empty
}
```

Spaces.

\HyPsd@spaceopti In the string the spaces are represented by \HyPsd@spaceopti tokens. Within an \edef it prints itself as a simple space and looks for its next argument. If another space follows, so it replaces the next \HyPsd@spaceopti by an protected space \040.

```
\def\HyPsd@spaceopti#1{ % first space
  \ifx\HyPsd@spaceopti#1%
    \040%
  \else
    #1%
  \fi
}%
```

6.6.6 Replacing tokens

\HyPsd@Subst To save tokens \HyPsd@StringSubst is an wrapper for the command \HyPsd@Subst that does all the work: In string stored in command #3 it replaces the tokens #1 with #2.

- #1 Exact the tokens that should be replaced.
- #2 The replacement (don't need to be expanded).
- #3 Command with the string.

```
\def\HyPsd@Subst#1#2#3{%
  \def\HyPsd@@Replace##1#1##2\END{%
    ##1%
    \ifx\\##2\\%
    \else
      #2%
      \Hy@ReturnAfterFi{%
        \HyPsd@@Replace##2\END
      }%
    \fi
  }%
  \xdef#3{%
    \expandafter\HyPsd@@Replace#3#1\END
  }%
}
```

\HyPsd@StringSubst To save tokens in \pdfstringdef \HyPsd@StringSubst is a wrapper, that expands argument #1 before calling \HyPsd@Subst.

```
\def\HyPsd@StringSubst#1{%
  \expandafter\HyPsd@Subst\expandafter{\string#1}%
}
```

6.6.7 Support for package `xspace`

`\HyPsd@doxspace` `\xspace` does not work, because it uses a `\futurelet` that cannot be executed in TEX's mouth. So this implementation uses an argument to examine the next token. In a previous version I reused `\@xspace`, but this version is shorter and easier to understand.

```
\def\HyPsd@doxspace#1{%
  \ifx#1\relax\else
   \ifx#1.\else
    \ifx#1:\else
     \ifx#1,\else
      \ifx#1;\else
       \ifx#1!\else
        \ifx#1?\else
         \ifx#1/\else
          \ifx#1-\else
           \ifx#1'\else
             \HyPsd@SPACEOPTI
           \fi
          \fi
         \fi
        \fi
       \fi
      \fi
     \fi
    \fi
   \fi
  \fi
  #1%
}%
```

6.6.8 Converting to Unicode

Eight bit characters are converted to the sixteen bit ones, `\8` is replaced by `\00`, and `\9` is removed. The result should be a valid Unicode PDF string without the Unicode marker at the beginning.

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

`\HyPsd@ConvertToUnicode`

```
  |gdef|HyPsd@ConvertToUnicode#1{%
    |xdef#1{%
      |expandafter|HyPsd@DoConvert#1|@empty|@empty|@empty
    }%
    |xdef#1{%
      |ifx#1|@empty
      |else
        \376\377%
        #1%
      |fi
    }%
  }
```

`\HyPsd@DoConvert`

```
  |gdef|HyPsd@DoConvert#1{%
    |ifx#1|@empty
```

```
    |else
      |Hy@ReturnAfterFi{%
        |ifx#1\%
          \%
          |expandafter|HyPsd@DoEscape
        |else
          \000#1%
          |expandafter|HyPsd@DoConvert
        |fi
      }%
    |fi
  }
```

`\HyPsd@DoEscape`

```
  |gdef|HyPsd@DoEscape#1{%
    |ifx#19%
      |expandafter|HyPsd@GetTwoBytes
    |else
      |Hy@ReturnAfterFi{%
        |ifx#18%
          00%
          |expandafter|HyPsd@GetTwoBytes
        |else
          #1%
          |expandafter|HyPsd@GetOneByte
        |fi
      }%
    |fi
  }
```

`\HyPsd@GetTwoBytes`

```
  |gdef|HyPsd@GetTwoBytes#1\#2#3#4{%
    #1\#2#3#4%
    |HyPsd@DoConvert
  }
```

`\HyPsd@GetOneBye`

```
  |gdef|HyPsd@GetOneByte#1#2{%
    #1#2%
    |HyPsd@DoConvert
  }
|endgroup
```

`\HyPsd@@GetNextTwoTokens` TEX does only allow nine parameters, so we need another macro to get more arguments.

```
\def\HyPsd@GetNextTwoTokens#1#2#3\END#4{%
  \xdef#4{#4#1#2}%
  \HyPsd@@ConvertToUnicode#3\END#4%
}
```

6.6.9 Support for UTF-8 input encoding

After `\usepackage[utf8]{inputenc}` there are macros that expect the UTF-8 octets as arguments. Therefore we can calculate the PDF octal sequences directly. Because the PDF format is limited to UCS-2, conversion macros are needed for UTF-8 sequences with two and three octets only.

This calculation must be done in an expandable context, so we use eTEXhere for performance reasons. Unhappily the results of divisions are rounded. Thus a circumvention via `\dimexpr` is used, e.g.:

`\numexpr 123/4\relax` is replaced by
`\number\dimexpr.25\dimexpr 123sp\relax\relax`

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname numexpr\endcsname\relax
  \let\HyPsd@UTFviii\relax
\else
  \def\HyPsd@UTFviii{%
    \let\UTFviii@two@octets\HyPsd@UTFviii@two
    \let\UTFviii@three@octets\HyPsd@UTFviii@three
    \let\unichar\HyPsd@unichar
  }%
```

The two octet form of UTF-8 `110aaabb` (A) and `10cccddd` (B) must be converted into octal numbers `00a` and `bcd`. The result is `\8a\bcd` (with a, b, c, d as octal numbers). The conversion equations.

$$a := A/4 - 48 \tag{1}$$
$$b := A - 4 * (A/4) \tag{2}$$
$$c := B/8 - 8 * ((8 * (B/8))/8) \tag{3}$$
$$d := B - 8 * (B/8) \tag{4}$$
$$\tag{5}$$

```
  \def\HyPsd@UTFviii@two#1#2{%
    \expandafter\HyPsd@UTFviii@@two
      \number\dimexpr.25\dimexpr`#1sp\expandafter\relax\expandafter|%
      \number`#1\expandafter|%
      \number\dimexpr.125\dimexpr`#2sp\expandafter\relax\expandafter|%
      \number`#2 \@nil
  }%
  \def\HyPsd@UTFviii@@two#1|#2|#3|#4\@nil{%
    \expandafter\8%
    \number\numexpr #1-48\expandafter\relax
    \csname\number\numexpr #2-4*#1\relax\expandafter\endcsname
    \number\numexpr #3-8*%
        \number\dimexpr.125\dimexpr#3sp\relax\relax\expandafter\relax
    \number\numexpr #4-8*#3\relax
  }%
```

Three octet form: `1110aabb` (A), `10bcccdd` (B), and `10eeefff` (C). The result is `\9abc\def` (with a, ..., f as octal numbers). The conversion equations:

$$a := A/4 - 56 \tag{6}$$
$$b := 2 * (A - 4 * (A/4)) + ((B - 128 < 32)?0 : 1) \tag{7}$$
$$c := B/4 - 32 - ((B - 128 < 32)?0 : 8) \tag{8}$$
$$d := B - 4 * (B/4) \tag{9}$$
$$e := C/8 - 16 \tag{10}$$
$$f := C - 8 * (C/8) \tag{11}$$
$$\tag{12}$$

```
  \def\HyPsd@UTFviii@three#1#2#3{%
    \expandafter\HyPsd@UTFviii@@three
```

```
    \number\dimexpr.25\dimexpr`#1sp\expandafter\relax\expandafter|%
    \number`#1\expandafter|%
    \number\ifnum\numexpr`#2-128\relax <32 0\else 1\fi\expandafter|%
    \number\dimexpr.25\dimexpr`#2sp\expandafter\relax\expandafter|%
    \number`#2\expandafter|%
    \number\dimexpr.125\dimexpr`#3sp\expandafter\relax\expandafter|%
    \number`#3 \@nil
}%
\def\HyPsd@UTFviii@@three#1|#2|#3|#4|#5|#6|#7\@nil{%
  \expandafter\9%
  \number\numexpr #1-56\expandafter\relax
  \number\numexpr 2*(#2-4*#1)+#3\expandafter\relax
  \number\numexpr #4 - 32 -\ifcase#3 0\else 8\fi\expandafter\relax
  \csname\number\numexpr #5-4*#4\relax\expandafter\endcsname
  \number\numexpr #6-16\expandafter\relax
  \number\numexpr #7-8*#6\relax
}%
```

Four octet form: `11110aab` (A), `10bcccdd` (B), `10deeeff` (C), and `10gggghhh` (D). The result are two surrogate characters `110010aabbcccddd` and `11001eeeffgggghhh`, or as octal numbers `\931a\bcd` and `\931e\fgh`. The conversion equations:

$$a := A/2 - 120 \tag{13}$$
$$b := (isodd(A)?2 : 0) + (B/32 - 4) \tag{14}$$
$$c := (B - 32 * (B/32))/4 \tag{15}$$
$$d := 2 * (B - 4 * (B/4)) + (C/32 - 4) \tag{16}$$
$$e := (C - 32 * (C/32))/4 \tag{17}$$
$$f := C - 4 * C/4 \tag{18}$$
$$g := D/8 - 16 \tag{19}$$
$$h := D - 8 * (D/8) \tag{20}$$
$$\tag{21}$$

```
\def\HyPsd@UTFviii@four#1{%
  \expandafter\HyPsd@UTFviii@@four\number`#1|%
}%
\def\HyPsd@UTFviii@@four#1|#2#3#4{%
    \expandafter\HyPsd@UTFviii@@@four\number#1\expandafter|%
    \number`#2\expandafter|
    \number\dimexpr.03125\dimexpr`#2sp\expandafter|%
    \number`#3\expandafter|%
    \number\dimexpr.03125\dimexpr`#3sp\expandafter|%
    \number`#4\expandafter|%
    \number\dimexpr.125\dimexpr`#4|%
}%
\def\HyPsd@UTFviii@@@four#1|#2|#3|#4|#5|#6|#7|{%
  \931%
  \number\numexpr\dimexpr.5\dimexpr#1sp\relax\relax -120\relax
  \csname\number\numexpr\ifodd#1 2\else 0\fi +#3-4\relax\endcsname
  \number\dimexpr.25\dimexpr #2sp - 32\dimexpr#3sp\relax\relax\relax
  % ...
}%
```

Input encoding `utf8x` of package `ucs` uses macro `\unichar`. Values greater than `"FFFF` are not supported.

```
\def\HyPsd@unichar#1{%
  \ifHy@unicode
```

```
      \ifnum#1>"10FFFF %
        \HyPsd@UnicodeReplacementCharacter % illegal
      \else
        \ifnum#1>"FFFF %
```

High-surrogate code point. ("D800 = 55296, \p@ = 1pt = 65536sp)

```
          \expandafter\HyPsd@unichar\expandafter{%
            \number\numexpr 55296+%
                \dimexpr.0009765625\dimexpr\number#1sp-\p@
                \relax\relax\relax
          }%
```

Low-surrogate code point. ("DC00 = 56320, "DC00 - 65536 = -9216)

```
          \expandafter\HyPsd@unichar\expandafter{%
            \number\numexpr#1-9216%
                -1024*\dimexpr.0009765625\dimexpr\number#1sp-\p@
                \relax\relax\relax
        }%
        \else
          \ifnum#1>"7FF %
            \9%
            \expandafter\HyPsd@unichar@first@byte\expandafter{%
              \number
              \dimexpr.00390625\dimexpr\number#1sp\relax\relax
            }%
          \else
            \8%
            \number\dimexpr.00390625\dimexpr\number#1sp\relax\relax
          \fi
          \expandafter\HyPsd@unichar@second@byte\expandafter{%
            \number
            \numexpr#1-256*\number
                \dimexpr.00390625\dimexpr\number#1sp\relax\relax\relax
          }%
        \fi
      \fi
    \else
      .% unsupported (Unicode -> PDF Doc Encoding)
    \fi
  }%
  \def\HyPsd@UnicodeReplacementCharacter{\9377\375}
  \def\HyPsd@unichar@first@byte#1{%
    \number\dimexpr.015625\dimexpr#1sp\relax\relax
    \expandafter\HyPsd@unichar@octtwo\expandafter{%
      \number
      \numexpr#1-64*\number\dimexpr.015625\dimexpr#1sp\relax\relax\relax
    }%
  }%
  \def\HyPsd@unichar@second@byte#1{%
    \csname\number\dimexpr.015625\dimexpr#1sp\relax\relax\endcsname
    \expandafter\HyPsd@unichar@octtwo\expandafter{%
      \number
      \numexpr#1-64*\number\dimexpr.015625\dimexpr#1sp\relax\relax\relax
    }%
  }%
  \def\HyPsd@unichar@octtwo#1{%
    \number\dimexpr.125\dimexpr#1sp\relax\relax
    \number\numexpr#1-8*\number\dimexpr.125\dimexpr#1sp\relax\relax\relax
```

```
  }%
\fi
```

7 Support of other packages

7.1 Class memoir

```
\@ifclassloaded{memoir}{%
  \AtEndOfPackage{\RequirePackage{memhfixc}}%
}{}
```

7.2 Package subfigure

Added fix for version 2.1. Here `\sub@label` is defined.

```
\@ifpackageloaded{subfigure}{%
  \@ifundefined{sub@label}{%
    \Hy@hypertexnamesfalse
  }{%
    \renewcommand*{\sub@label}[1]{%
      \@bsphack
      \subfig@oldlabel{#1}%
      \if@filesw
        \begingroup
          \edef\@currentlabstr{%
            \expandafter\strip@prefix\meaning\@currentlabelname
          }%
          \protected@write\@auxout{}{%
            \string\newlabel{sub@#1}{%
              {\@nameuse{@@thesub\@captype}}%
              {\thepage}%
              {\expandafter\strip@period\@currentlabstr\relax.\relax\@@@}%
              {\@currentHref}%
              {}%
            }%
          }%
        \endgroup
      \fi
      \@esphack
    }%
    \@ifpackagelater{subfigure}{2002/03/26}{}{%
      \providecommand*{\toclevel@subfigure}{1}%
      \providecommand*{\toclevel@subtable}{1}%
    }%
  }%
}{}
```

7.3 Package xr and xr-hyper

The beta version of xr that supports `\XR@addURL` is called `xr-hyper`. Therefore we test for the macro itself and not for the package name:

```
\@ifundefined{XR@addURL}{%
}{%
```

If reading external aux files check whether they have a non zero fourth field in `\newlabel` and if so, add the URL as the fifth field.

```
  \def\XR@addURL#1{\XR@@dURL#1{}{}{}{}\\}%
```

```
  \def\XR@@dURL#1#2#3#4#5\\{%
    {#1}{#2}%
    \if!#4!%
    \else
      {#3}{#4}{\XR@URL}%
    \fi
  }%
}
\def\Hy@true{true}
\def\Hy@false{false}
```

Providing dummy definitions.

```
\let\literalps@out\@gobble
\newcommand\pdfbookmark[3][]{}
\let\Acrobatmenu\@gobble
\def\Hy@writebookmark#1#2#3#4#5{}%
```

8 Help macros for links

Anchors get created on the baseline of where they occur. If an XYZ PDF view is set, this means that the link places the top of the screen *on the baseline* of the target. If this is an equation, for instance, it means that you cannot see anything. Some links, of course, are created at the start of environments, and so it works. To allow for this, anchors are raised, where possible, by some small amount. This defaults to `\baselineskip`, but users can set it to something else in two ways (thanks to Heiko Oberdiek for suggesting this):

1. Redefine `\HyperRaiseLinkDefault` to be eg the height of a `\strut`
2. Redefine `\HyperRaiseLinkHook` to do something complicated; it must give a value to `\HyperRaiseLinkLength`, which is what actually gets used

```
\let\HyperRaiseLinkLength\@tempdima
\let\HyperRaiseLinkHook\@empty
\def\HyperRaiseLinkDefault{\baselineskip}
```

`\HyperRaiseLinkHook` allows the user to reassign `\HyperRaiseLinkLength`.

```
\def\Hy@raisedlink#1{%
  \setlength\HyperRaiseLinkLength\HyperRaiseLinkDefault
  \HyperRaiseLinkHook
  \ifvmode
    #1%
  \else
    \penalty\@M
    \smash{\raise\HyperRaiseLinkLength\hbox{#1}}%
  \fi
}
```

`\Hy@SaveLastskip`
`\Hy@RestoreLastskip`

Inserting a `\special` command to set a destination destroys the `\lastskip` value.

```
\def\Hy@SaveLastskip{%
  \let\Hy@RestoreLastskip\relax
  \ifvmode
    \ifdim\lastskip=\z@
      \let\Hy@RestoreLastskip\nobreak
    \else
      \begingroup
        \skip@=-\lastskip
```

```
        \edef\x{%
          \endgroup
          \def\noexpand\Hy@RestoreLastskip{%
            \noexpand\ifvmode
              \noexpand\nobreak
              \vskip\the\skip@
              \vskip\the\lastskip\relax
            \noexpand\fi
          }%
        }%
      \x
    \fi
  \else
    \ifhmode
      \ifdim\lastskip=\z@
        \let\Hy@RestoreLastskip\nobreak
      \else
        \begingroup
          \skip@=-\lastskip
          \edef\x{%
            \endgroup
            \def\noexpand\Hy@RestoreLastskip{%
              \noexpand\ifhmode
                \noexpand\nobreak
                \hskip\the\skip@
                \hskip\the\lastskip\relax
              \noexpand\fi
            }%
          }%
        \x
      \fi
    \fi
  \fi
}%
```

9 Options

9.1 Help macros

\Hy@boolkey

```
\def\Hy@boolkey{\@dblarg\Hy@@boolkey}
\def\Hy@@boolkey[#1]#2#3{%
  \lowercase{\def\Hy@tempa{#3}}%
  \ifx\Hy@tempa\@empty
    \let\Hy@tempa\Hy@true
  \fi
  \ifx\Hy@tempa\Hy@true
  \else
    \ifx\Hy@tempa\Hy@false
    \else
      \let\Hy@tempa\relax
    \fi
  \fi
  \ifx\Hy@tempa\relax
    \Hy@WarnOptionValue{#3}{#1}{‘true’ or ’false’}%
  \else
```

```
    \Hy@Info{Option `#1' set `\Hy@tempa'}%
    \csname Hy@##2\Hy@tempa\endcsname
  \fi
}
```

\Hy@WarnOptionValue

```
\def\Hy@WarnOptionValue#1#2#3{%
  \Hy@Warning{%
    Unexpected value `#1'\MessageBreak
    of option `#2' instead of\MessageBreak
    #3%
  }
}
```

\Hy@DisableOption

```
\def\Hy@DisableOption#1{%
  \@ifundefined{KV@Hyp@#1@default}{%
    \define@key{Hyp}{#1}%
  }{%
    \define@key{Hyp}{#1}[]%
  }%
  {\Hy@WarnOptionDisabled{#1}}%
}
```

\Hy@WarnOptionDisabled

```
\def\Hy@WarnOptionDisabled#1{%
  \Hy@Warning{%
    Option `#1' has already been used,\MessageBreak
    setting the option has no effect%
  }%
}
```

\Hy@CheckOptionValue Some options take a string value out of a limited set of values. Macro \Hy@CheckOptionValue checks whether the given value #1 for option #2 is a member of the value list #3.

```
\def\Hy@CheckOptionValue#1#2#3{%
  \begingroup
    \edef\x{#1}%
    \@onelevel@sanitize\x
    \let\y=y%
    \def\do##1##2{%
      \def\z{##1}%
      \@onelevel@sanitize\z
      \ifx\x\z
        \let\y=n%
        \let\do\@gobbletwo
      \fi
    }%
    #3%
    \ifx\y y%
      \def\do##1##2{%
        * `##1'%
        \ifx\\##2\\\else\space(##2)\fi
        \MessageBreak
      }%
      \Hy@Warning{%
        Values of option `#2':\MessageBreak
        #3%
```

```
        * An empty value disables the option.\MessageBreak
        Unknown value `\x'%
      }%
    \fi
  \endgroup
}
```

`\Hy@DefNameKey` #1: option name
#2: `\do` list with known values, first argument of `\do` is value, second argument is a comment.

```
\def\Hy@DefNameKey#1{%
  \expandafter\Hy@@DefNameKey\csname @#1\endcsname{#1}%
}
```

`\Hy@@DefNameKey` #1: macro for value storage
#2: option name
#3: `\do` list with known values.

```
\def\Hy@@DefNameKey#1#2#3{%
  \define@key{Hyp}{#2}{%
    \edef#1{##1}%
    \ifx#1\@empty
    \else
      \Hy@CheckOptionValue{##1}{#2}{#3}%
    \fi
  }%
  \let#1\@empty
}
```

`\Hy@UseNameKey`

```
\def\Hy@UseNameKey#1#2{%
  \ifx#2\@empty
  \else
    /#1/#2%
  \fi
}
```

9.2 Defining the options

```
\define@key{Hyp}{implicit}[true]{%
  \Hy@boolkey{implicit}{#1}%
}
\define@key{Hyp}{draft}[true]{%
  \Hy@boolkey{draft}{#1}%
}
\define@key{Hyp}{final}[true]{%
  \Hy@boolkey{final}{#1}%
}
\let\KV@Hyp@nolinks\KV@Hyp@draft
\define@key{Hyp}{a4paper}[true]{%
  \def\special@paper{210mm,297mm}%
  \def\Hy@pageheight{842}%
}
\define@key{Hyp}{a5paper}[true]{%
  \def\special@paper{148mm,210mm}%
  \def\Hy@pageheight{595}%
}
```

```
\define@key{Hyp}{b5paper}[true]{%
  \def\special@paper{176mm,250mm}%
  \def\Hy@pageheight{709}%
}
\define@key{Hyp}{letterpaper}[true]{%
  \def\special@paper{8.5in,11in}%
  \def\Hy@pageheight{792}%
}
\define@key{Hyp}{legalpaper}[true]{%
  \def\special@paper{8.5in,14in}%
  \def\Hy@pageheight{1008}%
}
\define@key{Hyp}{executivepaper}[true]{%
  \def\special@paper{7.25in,10.5in}%
  \def\Hy@pageheight{720}%
}
\define@key{Hyp}{setpagesize}[true]{%
  \Hy@boolkey{setpagesize}{#1}%
}
\define@key{Hyp}{debug}[true]{%
  \Hy@boolkey[debug]{verbose}{#1}%
}
\define@key{Hyp}{linktocpage}[true]{%
  \Hy@boolkey{linktocpage}{#1}%
}
\define@key{Hyp}{extension}{\def\XR@ext{#1}}
\def\XR@ext{dvi}
\define@key{Hyp}{verbose}[true]{%
  \Hy@boolkey{verbose}{#1}%
}
\define@key{Hyp}{typexml}[true]{%
  \Hy@boolkey{typexml}{#1}%
}
```

If we are going to PDF via HyperTeX `\special` commands, the dvips (-z option) processor does not know the *height* of a link, as it works solely on the position of the closing `\special`. If we use this option, the `\special` is raised up by the right amount, to fool the dvi processor.

```
\define@key{Hyp}{raiselinks}[true]{%
  \Hy@boolkey{raiselinks}{#1}%
}
```

Most PDF-creating drivers do not allow links to be broken

```
\define@key{Hyp}{breaklinks}[true]{%
  \Hy@boolkey{breaklinks}{#1}%
}
```

Determines whether an automatic anchor is put on each page

```
\define@key{Hyp}{pageanchor}[true]{%
  \Hy@boolkey{pageanchor}{#1}%
}
```

Are the page links done as plain arabic numbers, or do they follow the formatting of the package? The latter loses if you put in typesetting like `\textbf` or the like.

```
\define@key{Hyp}{plainpages}[true]{%
  \Hy@boolkey{plainpages}{#1}%
}
```

Are the names for anchors made as per the HyperTeX system, or do they simply use what LaTeX provides?

```
\define@key{Hyp}{naturalnames}[true]{%
  \Hy@boolkey{naturalnames}{#1}%
}
```

Completely ignore the names as per the HyperTeX system, and use unique counters.

```
\define@key{Hyp}{hypertexnames}[true]{%
  \Hy@boolkey{hypertexnames}{#1}%
}
```

Currently, dvips doesn't allow anchors nested within targets, so this option tries to stop that happening. Other processors may be able to cope.

```
\define@key{Hyp}{nesting}[true]{%
  \Hy@boolkey{nesting}{#1}%
}
\define@key{Hyp}{unicode}[true]{%
  \Hy@boolkey{unicode}{#1}%
  \HyPsd@InitUnicode
}
```

10 Options for different drivers

```
\define@key{Hyp}{hyperref}[true]{}
\define@key{Hyp}{tex4ht}[true]{%
  \def\XR@ext{html}%
  \Hy@texhttrue
  \def\Hy@raisedlink{}%
  \setkeys{Hyp}{colorlinks=true}%
  \def\BeforeTeXIVht{\usepackage{color}}%
  \def\Hy@driver{htex4ht}%
  \def\MaybeStopEarly{%
    \typeout{Hyperref stopped early}%
    \AfterBeginDocument{\PDF@FinishDoc}%
    \endinput
  }%
}
\define@key{Hyp}{pdftex}[true]{%
  \def\Hy@driver{hpdftex}%
  \def\XR@ext{pdf}%
  \PassOptionsToPackage{pdftex}{color}%
  \Hy@breaklinkstrue
}
\define@key{Hyp}{dvipdf}[true]{%
  \Hy@WarningNoLine{%
    Option 'dvipdf' is deprecated.\MessageBreak
    See the user manual for available driver options%
  }%
}
\define@key{Hyp}{nativepdf}[true]{%
  \def\Hy@driver{hdvips}%
  \def\Hy@raisedlink{}%
  \def\XR@ext{pdf}%
}
\define@key{Hyp}{dvipdfm}[true]{%
  \def\Hy@driver{hdvipdfm}%
  \def\XR@ext{pdf}%
  \Hy@breaklinkstrue
}
\define@key{Hyp}{dvipdfmx}[true]{%
```

```
  \def\Hy@driver{hdvipdfm}%
  \def\XR@ext{pdf}%
  \Hy@breaklinkstrue
}
\define@key{Hyp}{xetex}[true]{%
  \def\Hy@driver{hdvipdfm}%
  \def\XR@ext{pdf}%
  \Hy@breaklinkstrue
}
\define@key{Hyp}{pdfmark}[true]{%
  \def\Hy@driver{hdvips}%
  \def\Hy@raisedlink{}%
  \def\XR@ext{pdf}%
}
\define@key{Hyp}{dvips}[true]{%
  \def\Hy@driver{hdvips}%
  \def\Hy@raisedlink{}%
  \def\XR@ext{pdf}%
}
\define@key{Hyp}{hypertex}[true]{%
  \def\Hy@driver{hypertex}%
}
\let\Hy@MaybeStopNow\relax
\define@key{Hyp}{vtex}[true]{%
  \begingroup\expandafter\expandafter\expandafter\endgroup
  \expandafter\ifx\csname OpMode\endcsname\relax
    \@latex@error{Non-VTeX processor}{}%
    \global\let\Hy@MaybeStopNow\endinput
    \endinput
  \else
    \ifnum 0\ifnum\OpMode<1 1\fi \ifnum\OpMode>3 1\fi =0 %
      \def\XR@ext{pdf}%
      \def\Hy@driver{hvtex}%
    \else
      \ifnum\OpMode=10\relax
        \def\XR@ext{htm}%
        \def\Hy@driver{hvtexhtm}%
        \def\MaybeStopEarly{%
           \typeout{Hyperref stopped early}%
           \AfterBeginDocument{\PDF@FinishDoc}%
           \endinput
        }%
      \else
        \@latex@error{Mode (\the\OpMode) has no hyperref driver}{}%
        \global\let\Hy@MaybeStopNow\endinput
        \endinput
      \fi
    \fi
  \fi
}
\define@key{Hyp}{vtexpdfmark}[true]{%
  \begingroup\expandafter\expandafter\expandafter\endgroup
  \expandafter\ifx\csname OpMode\endcsname\relax
    \@latex@error{Non-VTeX processor}{}%
    \let\Hy@MaybeStopNow\endinput
    \endinput
  \else
```

```
    \ifnum 0\ifnum\OpMode<1 1\fi \ifnum\OpMode>3 1\fi =0 %
      \def\XR@ext{pdf}%
      \def\Hy@driver{hvtexmrk}%
      \def\Hy@raisedlink{}%
    \else
      \@latex@error{Mode (\the\OpMode) has no hyperref driver}{}%
      \let\Hy@MaybeStopNow\endinput
      \endinput
    \fi
  \fi
}
\define@key{Hyp}{dviwindo}[true]{%
  \def\Hy@driver{hdviwind}%
  \setkeys{Hyp}{colorlinks}%
  \PassOptionsToPackage{dviwindo}{color}%
}
\define@key{Hyp}{dvipsone}[true]{%
  \def\XR@ext{pdf}%
  \def\Hy@driver{hdvipson}%
  \def\Hy@raisedlink{}%
}
\define@key{Hyp}{textures}[true]{%
  \def\XR@ext{pdf}%
  \def\Hy@driver{htexture}%
}
\define@key{Hyp}{latex2html}[true]{%
  \AtBeginDocument{\@@latextohtmlX}%
}
```

No more special treatment for ps2pdf. Let it sink or swim.

```
\define@key{Hyp}{ps2pdf}[true]{%
  \def\Hy@driver{hdvips}%
  \def\Hy@raisedlink{}%
  \providecommand*\@pdfborder{0 0 1}%
}
```

11 Options to add extra features

Make included figures (assuming they use the standard graphics package) be hypertext links. Off by default. Needs more work.

```
\define@key{Hyp}{hyperfigures}[true]{%
  \Hy@boolkey[hyperfigures]{figures}{#1}%
}
```

The automatic footnote linking can be disabled by option hyperfootnotes.

```
\define@key{Hyp}{hyperfootnotes}[true]{%
  \Hy@boolkey{hyperfootnotes}{#1}%
}
```

Set up back-referencing to be hyper links, by page, slide or section number,

```
\def\back@none{none}
\def\back@section{section}
\def\back@page{page}
\def\back@slide{slide}
\define@key{Hyp}{backref}[section]{%
  \lowercase{\def\Hy@tempa{#1}}%
  \ifx\Hy@tempa\@empty
    \let\Hy@tempa\back@section
```

```
  \fi
  \ifx\Hy@tempa\Hy@false
    \let\Hy@tempa\back@none
  \fi
  \ifx\Hy@tempa\back@slide
    \let\Hy@tempa\back@section
  \fi
  \ifx\Hy@tempa\back@page
    \PassOptionsToPackage{hyperpageref}{backref}%
    \Hy@backreftrue
  \else
    \ifx\Hy@tempa\back@section
      \PassOptionsToPackage{hyperref}{backref}%
      \Hy@backreftrue
    \else
      \ifx\Hy@tempa\back@none
        \Hy@backreffalse
      \else
        \Hy@WarnOptionValue{#1}{backref}{%
          `section', `slide', `page', `none',\MessageBreak
          or `false'}%
      \fi
    \fi
  \fi
}
\define@key{Hyp}{pagebackref}[true]{%
  \lowercase{\def\Hy@tempa{#1}}%
  \ifx\Hy@tempa\@empty
    \let\Hy@tempa\Hy@true
  \fi
  \ifx\Hy@tempa\Hy@true
    \PassOptionsToPackage{hyperpageref}{backref}%
    \Hy@backreftrue
  \else
    \ifx\Hy@tempa\Hy@false
      \Hy@backreffalse
    \else
      \Hy@WarnOptionValue{#1}{pagebackref}{`true' or `false'}%
    \fi
  \fi
}
```

Make index entries be links back to the relevant pages. By default this is turned on, but may be stopped.

```
\define@key{Hyp}{hyperindex}[true]{%
  \Hy@boolkey{hyperindex}{#1}%
}
```

Configuration of encap char.

```
\define@key{Hyp}{encap}[\|]{%
  \def\HyInd@EncapChar{#1}%
}
```

12 Language options

The `\autoref` feature depends on the language.

```
\def\HyLang@english{%
```

```
  \def\equationautorefname{Equation}%
  \def\footnoteautorefname{footnote}%
  \def\itemautorefname{item}%
  \def\figureautorefname{Figure}%
  \def\tableautorefname{Table}%
  \def\partautorefname{Part}%
  \def\appendixautorefname{Appendix}%
  \def\chapterautorefname{chapter}%
  \def\sectionautorefname{section}%
  \def\subsectionautorefname{subsection}%
  \def\subsubsectionautorefname{subsubsection}%
  \def\paragraphautorefname{paragraph}%
  \def\subparagraphautorefname{subparagraph}%
  \def\FancyVerbLineautorefname{line}%
  \def\theoremautorefname{Theorem}%
}
\def\HyLang@german{%
  \def\equationautorefname{Gleichung}%
  \def\footnoteautorefname{Fu\ss note}%
  \def\itemautorefname{Punkt}%
  \def\figureautorefname{Abbildung}%
  \def\tableautorefname{Tabelle}%
  \def\partautorefname{Teil}%
  \def\appendixautorefname{Anhang}%
  \def\chapterautorefname{Kapitel}%
  \def\sectionautorefname{Abschnitt}%
  \def\subsectionautorefname{Unterabschnitt}%
  \def\subsubsectionautorefname{Unterunterabschnitt}%
  \def\paragraphautorefname{Absatz}%
  \def\subparagraphautorefname{Unterabsatz}%
  \def\FancyVerbLineautorefname{Zeile}%
  \def\theoremautorefname{Theorem}%
}
\def\HyLang@portuges{%
  \def\equationautorefname{Equa\c c\~ao}%
  \def\footnoteautorefname{Nota de rodap\'e}%
  \def\itemautorefname{Item}%
  \def\figureautorefname{Figura}%
  \def\tableautorefname{Tabela}%
  \def\partautorefname{Parte}%
  \def\appendixautorefname{Ap\^endice}%
  \def\chapterautorefname{Cap\'itulo}%
  \def\sectionautorefname{Se\c c\~ao}%
  \def\subsectionautorefname{Subse\c c\~ao}%
  \def\subsubsectionautorefname{Subsubse\c c\~ao}%
  \def\paragraphautorefname{par\'agrafo}%
  \def\subparagraphautorefname{subpar\'agrafo}%
  \def\FancyVerbLineautorefname{linha}%
  \def\theoremautorefname{Teorema}%
}
\def\HyLang@spanish{%
  \def\equationautorefname{Ecuaci\'on}%
  \def\footnoteautorefname{Nota a pie de p\'agina}%
  \def\itemautorefname{Elemento}%
  \def\figureautorefname{Figura}%
  \def\tableautorefname{Tabla}%
  \def\partautorefname{Parte}%
```

```
  \def\appendixautorefname{Ap\'endice}%
  \def\chapterautorefname{Cap\'itulo}%
  \def\sectionautorefname{Secci\'on}%
  \def\subsectionautorefname{Subsecci\'on}%
  \def\subsubsectionautorefname{Subsubsecci\'on}%
  \def\paragraphautorefname{P\'arrafo}%
  \def\subparagraphautorefname{Subp\'arrafo}%
  \def\FancyVerbLineautorefname{L\'inea}%
  \def\theoremautorefname{Teorema}%
}
\def\HyLang@afrikaans{%
  \def\equationautorefname{Vergelyking}%
  \def\footnoteautorefname{Voetnota}%
  \def\itemautorefname{Item}%
  \def\figureautorefname{Figuur}%
  \def\tableautorefname{Tabel}%
  \def\partautorefname{Deel}%
  \def\appendixautorefname{Bylae}%
  \def\chapterautorefname{Hoofstuk}%
  \def\sectionautorefname{Afdeling}%
  \def\subsectionautorefname{Subafdeling}%
  \def\subsubsectionautorefname{Subsubafdeling}%
  \def\paragraphautorefname{Paragraaf}%
  \def\subparagraphautorefname{Subparagraaf}%
  \def\FancyVerbLineautorefname{Lyn}%
  \def\theoremautorefname{Teorema}%
}
\def\HyLang@french{%
  \def\equationautorefname{\'Equation}%
  \def\footnoteautorefname{note}%
  \def\itemautorefname{item}%
  \def\figureautorefname{Figure}%
  \def\tableautorefname{Tableau}%
  \def\partautorefname{Partie}%
  \def\appendixautorefname{Appendice}%
  \def\chapterautorefname{chapitre}%
  \def\sectionautorefname{section}%
  \def\subsectionautorefname{sous-section}%
  \def\subsubsectionautorefname{sous-sous-section}%
  \def\paragraphautorefname{paragraphe}%
  \def\subparagraphautorefname{sous-paragraphe}%
  \def\FancyVerbLineautorefname{ligne}%
  \def\theoremautorefname{Th\'eor\`eme}%
}
\def\HyLang@vietnamese{%
  \def\equationautorefname{Ph\uhorn{}\ohorn{}ng tr\`inh}%
  \def\footnoteautorefname{Ch\'u th\'ich}%
  \def\itemautorefname{m\d{u}c}%
  \def\figureautorefname{H\`inh}%
  \def\tableautorefname{B\h{a}ng}%
  \def\partautorefname{Ph\^\acircumflex{}n}%
  \def\appendixautorefname{Ph\d{u} l\d{u}c}%
  \def\chapterautorefname{ch\uhorn{}\ohorn{}ng}%
  \def\sectionautorefname{m\d{u}c}%
  \def\subsectionautorefname{m\d{u}c}%
  \def\subsubsectionautorefname{m\d{u}c}%
  \def\paragraphautorefname{\dj{}o\d{a}n}%
```

```
  \def\subparagraphautorefname{\dj{}o\d{a}n}%
  \def\FancyVerbLineautorefname{d\‘ong}%
  \def\theoremautorefname{\DJ{}\d{i}nh l\’y}%
}
```

Instead of package babel's definition of `\addto` the implementation of package varioref is used. Additionally argument `#1` is checked for `\relax`.

```
\def\HyLang@addto#1#2{%
  #2%
  \@temptokena{#2}%
  \ifx#1\relax
    \let#1\@empty
  \fi
  \ifx#1\undefined
     \edef#1{\the\@temptokena}%
  \else
     \toks@\expandafter{#1}%
     \edef#1{\the\toks@\the\@temptokena}%
  \fi
  \@temptokena{}\toks@\@temptokena
}
\def\HyLang@DeclareLang#1#2{%
  \begingroup
    \edef\x##1##2{%
      \noexpand\ifx##2\relax
        \errmessage{No definitions for language #2' found!}%
      \noexpand\fi
      \endgroup
      \noexpand\define@key{Hyp}{#1}[]{%
        \noexpand\HyLang@addto{\noexpand##1}{\noexpand##2}%
      }%
    }%
  \expandafter\x\csname extras#1\expandafter\endcsname
                 \csname HyLang@#2\endcsname
}
\HyLang@DeclareLang{english}{english}
\HyLang@DeclareLang{UKenglish}{english}
\HyLang@DeclareLang{british}{english}
\HyLang@DeclareLang{USenglish}{english}
\HyLang@DeclareLang{american}{english}
\HyLang@DeclareLang{german}{german}
\HyLang@DeclareLang{austrian}{german}
\HyLang@DeclareLang{ngerman}{german}
\HyLang@DeclareLang{naustrian}{german}
\HyLang@DeclareLang{brazil}{portuges}
\HyLang@DeclareLang{brazilian}{portuges}
\HyLang@DeclareLang{portuguese}{portuges}
\HyLang@DeclareLang{spanish}{spanish}
\HyLang@DeclareLang{afrikaans}{afrikaans}
\HyLang@DeclareLang{french}{french}
\HyLang@DeclareLang{frenchb}{french}
\HyLang@DeclareLang{francais}{french}
\HyLang@DeclareLang{acadian}{french}
\HyLang@DeclareLang{canadien}{french}
```

More work is needed in case of options `vietnamese` and `vietnam`.

```
\define@key{Hyp}{vietnamese}[]{%
  \HyLang@addto\extrasvietnamese\HyLang@vietnamese
```

```
  \AtEndOfPackage{%
    \@ifundefined{T@PU}{}{%
      \input{puvnenc.def}%
    }%
  }%
}
\define@key{Hyp}{vietnam}[]{%
  \HyLang@addto\extrasvietnam\HyLang@vietnamese
  \AtEndOfPackage{%
    \@ifundefined{T@PU}{}{%
      \input{puvnenc.def}%
    }%
  }%
}
```

Similar for option `arabic` that just loads the additions to PU encoding for Arabi.

```
\define@key{Hyp}{arabic}[]{%
  \AtEndOfPackage{%
    \@ifundefined{T@PU}{}{%
      \input{puarenc.def}%
    }%
  }%
}
```

13 Options to change appearance of links

Colouring links at the LaTeX level is useful for debugging, perhaps.

```
\define@key{Hyp}{colorlinks}[true]{%
  \Hy@boolkey{colorlinks}{#1}%
  \ifHy@colorlinks
    \def\@pdfborder{0 0 0}%
    \let\@pdfborderstyle\@empty
  \fi
}
\define@key{Hyp}{frenchlinks}[true]{%
  \Hy@boolkey{frenchlinks}{#1}%
}
```

14 Bookmarking

```
\define@key{Hyp}{bookmarks}[true]{%
  \Hy@boolkey{bookmarks}{#1}%
}
\define@key{Hyp}{bookmarksopen}[true]{%
  \Hy@boolkey{bookmarksopen}{#1}%
}
```

The depth of the outlines is controlled by option `bookmarksdepth`. The option acts globally and distinguishes three cases:

- `bookmarksdepth`: Without value hyperref uses counter `tocdepth` (compatible behaviour and default).
- `bookmarksdepth=<number>`: the depth is set to `<number>`.

- bookmarksdepth=<name>: The <name> must not start with a number or minus sign. It is a document division name (part, chapter, section, ...). Internally the value of macro \toclevel@<name> is used.

```
\let\Hy@bookmarksdepth\c@tocdepth
\define@key{Hyp}{bookmarksdepth}[]{%
  \begingroup
    \edef\x{#1}%
    \ifx\x\empty
      \global\let\Hy@bookmarksdepth\c@tocdepth
    \else
      \@ifundefined{toclevel@\x}{%
        \@onelevel@sanitize\x
        \edef\y{\expandafter\@car\x\@nil}%
        \ifcase 0\expandafter\ifx\y-1\fi
                 \expandafter\ifnum\expandafter`\y>47 %
                   \expandafter\ifnum\expandafter`\y<58 1\fi\fi\relax
          \Hy@Warning{Unknown document division name (\x)}%
        \else
          \setbox\z@=\hbox{%
            \count@=\x
            \xdef\Hy@bookmarksdepth{\the\count@}%
          }%
        \fi
      }{%
        \setbox\z@=\hbox{%
          \count@=\csname toclevel@\x\endcsname
          \xdef\Hy@bookmarksdepth{\the\count@}%
        }%
      }%
    \fi
  \endgroup
}
```

'bookmarksopenlevel' to specify the open level. From Heiko Oberdiek.

```
\define@key{Hyp}{bookmarksopenlevel}{%
  \def\@bookmarksopenlevel{#1}%
}
\def\@bookmarksopenlevel{\maxdimen}
% 'bookmarkstype' to specify which 'toc' file to mimic
\define@key{Hyp}{bookmarkstype}{%
  \def\Hy@bookmarkstype{#1}%
}
\def\Hy@bookmarkstype{toc}
```

Richard Curnow ¡richard@curnow.demon.co.uk¿ suggested this functionality. It adds section numbers etc to bookmarks.

```
\define@key{Hyp}{bookmarksnumbered}[true]{%
  \Hy@boolkey{bookmarksnumbered}{#1}%
}
```

Option CJKbookmarks enables the patch for CJK bookmarks.

```
\define@key{Hyp}{CJKbookmarks}[true]{%
  \Hy@boolkey{CJKbookmarks}{#1}%
}
```

```
\define@key{Hyp}{linkcolor}{\def\@linkcolor{#1}}
\define@key{Hyp}{anchorcolor}{\def\@anchorcolor{#1}}
\define@key{Hyp}{citecolor}{\def\@citecolor{#1}}
```

```
\define@key{Hyp}{urlcolor}{\def\@urlcolor{#1}}
\define@key{Hyp}{menucolor}{\def\@menucolor{#1}}
\define@key{Hyp}{filecolor}{\def\@filecolor{#1}}
\define@key{Hyp}{pagecolor}{\def\@pagecolor{#1}}
```

Default values:

```
\def\@linkcolor{red}
\def\@anchorcolor{black}
\def\@citecolor{green}
\def\@filecolor{cyan}
\def\@urlcolor{magenta}
\def\@menucolor{red}
\def\@pagecolor{red}
\def\hyperbaseurl#1{\def\@baseurl{#1}}
\define@key{Hyp}{baseurl}{\hyperbaseurl{#1}}
\let\@baseurl\@empty
\def\hyperlinkfileprefix#1{\def\Hy@linkfileprefix{#1}}
\define@key{Hyp}{linkfileprefix}{\hyperlinkfileprefix{#1}}
\hyperlinkfileprefix{file:}
```

15 PDF-specific options

`\@pdfpagetransition` The value of option `pdfpagetransition` is stored in `\@pdfpagetransition`. Its initial value is set to `\relax` in order to be able to differentiate between a not used option and an option with an empty value.

```
\let\@pdfpagetransition\relax
\define@key{Hyp}{pdfpagetransition}{\def\@pdfpagetransition{#1}}
```

`\@pdfpageduration` The value of option `pdfpageduration` is stored in `\@pdfpageduration`. Its initial value is set to `\relax` in order to be able to differentiate between a not used option and an option with an empty value.

```
\let\@pdfpageduration\relax
\define@key{Hyp}{pdfpageduration}{\def\@pdfpageduration{#1}}
```

The entry for the `/Hid` key in the page object is only necessary, if it is used and set to true for at least one time. If it is always false, then the `/Hid` key is not written to the pdf page object in order not to enlarge the pdf file.

```
\newif\ifHy@useHidKey
\Hy@useHidKeyfalse
\define@key{Hyp}{pdfpagehidden}[true]{%
  \Hy@boolkey{pdfpagehidden}{#1}%
  \ifHy@pdfpagehidden
    \global\Hy@useHidKeytrue
  \fi
}
```

The value of the `bordercolor` options are not processed by the color package. Therefore the value consists of space separated rgb numbers in the range 0 until 1.

Package `xcolor` provides `\XC@bordercolor` since version 1.1. If the two spaces in the color specification are missing, then the value is processed as color specification from package `xcolor` by using `\XC@bordercolor` (since xcolor 2004/05/09 v1.11, versions 2005/03/24 v2.02 until 2006/11/28 v2.10 do not work because of a bug that is fixed in 2007/01/21 v2.11).

```
\def\Hy@ColorList{cite,file,link,menu,page,run,url}
\@for\Hy@temp:=\Hy@ColorList\do{%
```

```
  \edef\Hy@temp{%
    \noexpand\define@key{Hyp}{\Hy@temp bordercolor}{%
      \noexpand\Hy@bordercolor{\Hy@temp}{##1}{ }%
    }%
  }%
  \Hy@temp
}
\def\Hy@bordercolor#1#2#3{%
  \begingroup
    \Hy@safe@activestrue
    \@ifundefined{XC@edef}{\edef}{\XC@edef}\x{#2}%
    \expandafter\Hy@CheckColorSpec\x#3#3\@nil{#1}{#2}%
}
\def\Hy@CheckColorSpec#1 #2 #3\@nil#4#5{%
  \ifx\\#3\\%
    \@ifundefined{XC@bordercolor}{%
      \Hy@Warning{%
          Unsupported color specification (#4bordercolor).\MessageBreak
          Load package 'xcolor' (version >= 2.11) first.\MessageBreak
          Ignoring color specification%
      }%
      \endgroup
    }{%
      \endgroup
      \XC@bordercolor{#4}{#5}%
    }%
  \else
    \endgroup
    \@namedef{@#4bordercolor}{#5}%
  \fi
}
\define@key{Hyp}{pdfhighlight}{\def\@pdfhighlight{#1}}
\Hy@DefNameKey{pdfhighlight}{%
  \do{/I}{Invert}%
  \do{/N}{None}%
  \do{/O}{Outline}%
  \do{/P}{Push}%
}
\define@key{Hyp}{pdfborder}{\def\@pdfborder{#1}}
\define@key{Hyp}{pdfborderstyle}{\def\@pdfborderstyle{#1}}
\def\Hy@setpdfborder{%
  \ifx\@pdfborder\@empty
  \else
    /Border[\@pdfborder]%
  \fi
  \ifx\@pdfborderstyle\@empty
  \else
    /BS<<\@pdfborderstyle>>%
  \fi
}
\Hy@DefNameKey{pdfpagemode}{%
  \do{UseNone}{}%
  \do{UseOutlines}{}%
  \do{UseThumbs}{}%
  \do{FullScreen}{}%
  \do{UseOC}{PDF 1.5}%
  \do{UseAttachments}{PDF 1.6}%
```

```
}
\Hy@DefNameKey{pdfnonfullscreenpagemode}{%
  \do{UseNone}{}%
  \do{UseOutlines}{}%
  \do{UseThumbs}{}%
  \do{FullScreen}{}%
  \do{UseOC}{PDF 1.5}%
  \do{UseAttachments}{PDF 1.6}%
}
\Hy@DefNameKey{pdfdirection}{%
  \do{L2R}{Left to right}%
  \do{R2L}{Right to left}%
}
\Hy@DefNameKey{pdfviewarea}{%
  \do{MediaBox}{}%
  \do{CropBox}{}%
  \do{BleedBox}{}%
  \do{TrimBox}{}%
  \do{ArtBox}{}%
}
\Hy@DefNameKey{pdfviewclip}{%
  \do{MediaBox}{}%
  \do{CropBox}{}%
  \do{BleedBox}{}%
  \do{TrimBox}{}%
  \do{ArtBox}{}%
}
\Hy@DefNameKey{pdfprintarea}{%
  \do{MediaBox}{}%
  \do{CropBox}{}%
  \do{BleedBox}{}%
  \do{TrimBox}{}%
  \do{ArtBox}{}%
}
\Hy@DefNameKey{pdfprintclip}{%
  \do{MediaBox}{}%
  \do{CropBox}{}%
  \do{BleedBox}{}%
  \do{TrimBox}{}%
  \do{ArtBox}{}%
}
\Hy@DefNameKey{pdfprintscaling}{%
  \do{AppDefault}{}%
  \do{None}{}%
}
\Hy@DefNameKey{pdfduplex}{%
  \do{Simplex}{}%
  \do{DuplexFlipShortEdge}{}%
  \do{DuplexFlipLongEdge}{}%
}
\Hy@DefNameKey{pdfpicktraybypdfsize}{%
  \do{true}{}%
  \do{false}{}%
}
\define@key{Hyp}{pdfprintpagerange}{%
  \def\@pdfprintpagerange{#1}%
}
```

```
\Hy@DefNameKey{pdfnumcopies}{%
  \do{2}{two copies}%
  \do{3}{three copies}%
  \do{4}{four copies}%
  \do{5}{five copies}%
}
\define@key{Hyp}{pdfusetitle}[true]{%
  \Hy@boolkey[pdfusetitle]{usetitle}{#1}%
}
\define@key{Hyp}{pdftitle}{\pdfstringdef\@pdftitle{#1}}
\define@key{Hyp}{pdfauthor}{\pdfstringdef\@pdfauthor{#1}}
\define@key{Hyp}{pdfproducer}{\pdfstringdef\@pdfproducer{#1}}
\define@key{Hyp}{pdfcreator}{\pdfstringdef\@pdfcreator{#1}}
\define@key{Hyp}{pdfcreationdate}{\pdfstringdef\@pdfcreationdate{#1}}
\define@key{Hyp}{pdfmoddate}{\pdfstringdef\@pdfmoddate{#1}}
\define@key{Hyp}{pdfsubject}{\pdfstringdef\@pdfsubject{#1}}
\define@key{Hyp}{pdfkeywords}{\pdfstringdef\@pdfkeywords{#1}}
\define@key{Hyp}{pdfview}{\calculate@pdfview#1 \\}
\define@key{Hyp}{pdflinkmargin}{\setpdflinkmargin{#1}}
\let\setpdflinkmargin\@gobble
\def\calculate@pdfview#1 #2\\{%
  \def\@pdfview{#1}%
  \ifx\\#2\\%
    \def\@pdfviewparams{ -32768}%
  \else
    \def\@pdfviewparams{ #2}%
  \fi
}
\define@key{Hyp}{pdfstartpage}{\def\@pdfstartpage{#1}}
\define@key{Hyp}{pdfstartview}{%
  \ifx\\#1\\%
    \def\@pdfstartview{}%
  \else
    \hypercalcbpdef\@pdfstartview{ /#1 }%
  \fi
}
\define@key{Hyp}{pdfpagescrop}{\edef\@pdfpagescrop{#1}}
\define@key{Hyp}{pdftoolbar}[true]{%
  \Hy@boolkey[pdftoolbar]{toolbar}{#1}%
}
\define@key{Hyp}{pdfmenubar}[true]{%
  \Hy@boolkey[pdfmenubar]{menubar}{#1}%
}
\define@key{Hyp}{pdfwindowui}[true]{%
  \Hy@boolkey[pdfwindowui]{windowui}{#1}%
}
\define@key{Hyp}{pdffitwindow}[true]{%
  \Hy@boolkey[pdffitwindow]{fitwindow}{#1}%
}
\define@key{Hyp}{pdfcenterwindow}[true]{%
  \Hy@boolkey[pdfcenterwindow]{centerwindow}{#1}%
}
\define@key{Hyp}{pdfdisplaydoctitle}[true]{%
  \Hy@boolkey[pdfdisplaydoctitle]{displaydoctitle}{#1}%
}
\define@key{Hyp}{pdfnewwindow}[true]{%
  \Hy@boolkey[pdfnewwindow]{newwindow}{#1}%
```

```
}
\Hy@DefNameKey{pdfpagelayout}{%
  \do{SinglePage}{}%
  \do{OneColumn}{}%
  \do{TwoColumnLeft}{}%
  \do{TwoColumnRight}{}%
  \do{TwoPageLeft}{PDF 1.5}%
  \do{TwoPageRight}{PDF 1.5}%
}
\define@key{Hyp}{pdflang}{%
  \def\@pdflang{#1}%
}
\define@key{Hyp}{pdfpagelabels}[true]{%
  \Hy@boolkey[pdfpagelabels]{pagelabels}{#1}%
}
\define@key{Hyp}{pdfescapeform}[true]{%
  \Hy@boolkey[pdfescapeform]{escapeform}{#1}%
}
```

Default values:

```
\def\@linkbordercolor{1 0 0}
\def\@urlbordercolor{0 1 1}
\def\@menubordercolor{1 0 0}
\def\@filebordercolor{0 .5 .5}
\def\@runbordercolor{0 .7 .7}
\def\@citebordercolor{0 1 0}
\def\@pagebordercolor{1 1 0}
\def\@pdfhighlight{/I}
\def\@pdftitle{}
\def\@pdfauthor{}
\let\@pdfproducer\relax
\def\@pdfcreator{LaTeX with hyperref package}
\def\@pdfcreationdate{}
\def\@pdfmoddate{}
\def\@pdfsubject{}
\def\@pdfkeywords{}
\def\@pdfpagescrop{}
\def\@pdfstartview{ /Fit }
\def\@pdfstartpage{1}
\def\@pdfprintpagerange{}
\def\@pdflang{}
\let\PDF@SetupDoc\@empty
\let\PDF@FinishDoc\@empty
\let\phantomsection\@empty
\@ifundefined{stockwidth}{%
  \edef\special@paper{\the\paperwidth,\the\paperheight}
}{%
  \edef\special@paper{\the\stockwidth,\the\stockheight}
}
\begingroup
  \dimen@=\@ifundefined{stockheight}{\paperheight}{\stockheight}\relax
  \dimen@=0.99626401\dimen@
  \xdef\Hy@pageheight{\strip@pt\dimen@}
\endgroup
\def\HyInd@EncapChar{\|}
\def\hypersetup{\setkeys{Hyp}}
```

Allow the user to use \ExecuteOptions in the cfg file even though this package does not use the normal option mechanism. Use \hyper@normalise as a scratch macro, since it is going to be defined in a couple of lines anyway.

```
\let\hyper@normalise\ExecuteOptions
\let\ExecuteOptions\hypersetup
\Hy@RestoreCatcodes
\InputIfFileExists{hyperref.cfg}{}{}
\Hy@SetCatcodes
\let\ExecuteOptions\hyper@normalise
\Hy@MaybeStopNow
```

To add flexibility, we will not use the ordinary processing of package options, but put them through the *keyval* package. This section was written by David Carlisle.

Package kvoptions is used for processing options that are given as key value pairs. The package provides \ProcessKeyvalOptions, formerly known as \ProcessOptionsWithKV.

```
\RequirePackage{kvoptions}[2006/08/17]
```

Add option tex4ht if package tex4ht is loaded.

```
\@ifpackageloaded{tex4ht}{%
  \@ifpackagewith{hyperref}{tex4ht}{}{%
    \PassOptionsToPackage{tex4ht}{hyperref}%
  }%
}{}
```

```
\let\ReadBookmarks\relax
\ProcessKeyvalOptions{Hyp}
```

After processing options.

```
\AtBeginDocument{%
  \ifHy@draft
    \let\hyper@@anchor\@gobble
    \gdef\hyper@link#1#2#3{#3}%
    \let\hyper@anchorstart\@gobble
    \let\hyper@anchorend\@empty
    \let\hyper@linkstart\@gobbletwo
    \let\hyper@linkend\@empty
    \def\hyper@linkurl#1#2{#1}%
    \def\hyper@linkfile#1#2#3{#1}%
    \def\Acrobatmenu#1#2{#2}%
    \let\PDF@SetupDoc\@empty
    \let\PDF@FinishDoc\@empty
    \let\@fifthoffive\@secondoftwo
    \let\@secondoffive\@secondoftwo
    \let\ReadBookmarks\relax
    \let\WriteBookmarks\relax
    \Hy@WarningNoLine{ draft mode on}%
  \fi
  \Hy@DisableOption{draft}%
  \Hy@DisableOption{nolinks}%
  \Hy@DisableOption{final}%
}%
```

If option unicode is already processed, then the command \HyPsd@InitUnicode is cleared after execution. Then the option code only sets the meaning of the switch \ifHy@unicode.

```
\ifx\HyPsd@InitUnicode\relax
  \define@key{Hyp}{unicode}[true]{%
    \Hy@boolkey{unicode}{#1}%
```

```
  }
\else
  \define@key{Hyp}{unicode}[true]{%
    \Hy@boolkey{unicode}{#1}%
    \ifHy@unicode
      \Hy@WarningNoLine{Set package option `unicode' first\MessageBreak
                  in order to load unicode support%
      }%
      \Hy@unicodefalse
    \fi
  }
\fi
```

The macro `\HyPsd@InitUnicode` is no longer needed.

```
\let\HyPsd@InitUnicode\@undefined
```

15.1 Patch for babel's `\texttilde`

Babel does not define `\texttilde` in NFSS2 manner, so the NFSS2 definitions of PD1 or PU encoding is not compatible. To fix this, `\texttilde` is defined in babel manner.

```
\Hy@nextfalse
\@ifpackagewith{babel}{spanish}{\Hy@nexttrue}{}
\@ifpackagewith{babel}{galician}{\Hy@nexttrue}{}
\@ifpackagewith{babel}{estonian}{\Hy@nexttrue}{}
\ifHy@next
  \let\texttilde\~%
\fi
```

```
\ifHy@figures
  \Hy@Info{Hyper figures ON}
\else
  \Hy@Info{Hyper figures OFF}
\fi
\ifHy@nesting
  \Hy@Info{Link nesting ON}
\else
  \Hy@Info{Link nesting OFF}
\fi
\ifHy@hyperindex
  \Hy@Info{Hyper index ON}
\else
  \Hy@Info{Hyper index OFF}
\fi
\ifHy@plainpages
  \Hy@Info{Plain pages ON}
\else
  \Hy@Info{Plain pages OFF}
\fi
\ifHy@backref
  \Hy@Info{Backreferencing ON}
\else
  \Hy@Info{Backreferencing OFF}
\fi
\ifHy@typexml
   \AtEndOfPackage{\RequirePackage{color}\RequirePackage{nameref}}
\fi
\Hy@DisableOption{typexml}
\ifHy@implicit
```

```
  \typeout{Implicit mode ON; LaTeX internals redefined}%
\else
  \typeout{Implicit mode OFF; no redefinition of LaTeX internals}%
  \def\MaybeStopEarly{%
    \typeout{Hyperref stopped early}%
    \AfterBeginDocument{\PDF@FinishDoc}%
    \endinput
  }%
  \AtBeginDocument{%
    \let\autoref\ref
    \ifx\@pdfpagemode\@empty
      \gdef\@pdfpagemode{UseNone}%
    \fi
    \global\Hy@backreffalse
  }%
  \AtEndOfPackage{%
    \global\let\ReadBookmarks\relax
    \global\let\WriteBookmarks\relax
  }%
\fi
\Hy@DisableOption{implicit}
```

15.1.1 Driver loading

```
\AtEndOfPackage{%
  \@ifpackageloaded{tex4ht}{%
    \def\Hy@driver{htex4ht}%
    \Hy@texhttrue
  }{}%
  \ifx\Hy@driver\@empty
    \providecommand*{\Hy@defaultdriver}{hypertex}%
    \begingroup\expandafter\expandafter\expandafter\endgroup
    \expandafter\ifx\csname pdfoutput\endcsname\relax
      \begingroup\expandafter\expandafter\expandafter\endgroup
      \expandafter\ifx\csname OpMode\endcsname\relax
        \begingroup\expandafter\expandafter\expandafter\endgroup
        \expandafter\ifx\csname XeTeXversion\endcsname\relax
          \let\Hy@driver\Hy@defaultdriver
        \else
          \def\Hy@driver{hdvipdfm}%
        \fi
      \else
        \ifnum 0\ifnum\OpMode<1 1\fi \ifnum\OpMode>3 1\fi =0 %
          \def\Hy@driver{hvtex}%
          \def\XR@ext{pdf}%
        \else
          \ifnum\OpMode=10\relax
            \def\XR@ext{htm}%
            \def\Hy@driver{hvtexhtm}%
            \def\MaybeStopEarly{%
              \typeout{Hyperref stopped early}%
              \AfterBeginDocument{\PDF@FinishDoc}%
              \endinput
            }%
          \else
            \let\Hy@driver\Hy@defaultdriver
          \fi
```

```
        \fi
      \fi
    \else
      \ifnum\pdfoutput<1 %
        \let\Hy@driver\Hy@defaultdriver
      \else
        \def\Hy@driver{hpdftex}%
        \def\XR@ext{pdf}%
        \PassOptionsToPackage{pdftex}{color}%
        \Hy@breaklinkstrue
      \fi
    \fi
    \ifx\Hy@driver\Hy@defaultdriver
      \def\Hy@temp{hdvips}%
      \ifx\Hy@temp\Hy@driver
        \def\Hy@raisedlink{}%
        \def\XR@ext{pdf}%
      \fi
      \def\Hy@temp{hdvipdfm}%
      \ifx\Hy@temp\Hy@driver
        \def\XR@ext{pdf}%
        \Hy@breaklinkstrue
      \fi
      \def\Hy@temp{hdviwind}%
      \ifx\Hy@temp\Hy@driver
        \setkeys{Hyp}{colorlinks}%
        \PassOptionsToPackage{dviwindo}{color}%
      \fi
      \def\Hy@temp{hdvipson}%
      \ifx\Hy@temp\Hy@driver
        \def\XR@ext{pdf}%
        \def\Hy@raisedlink{}%
      \fi
      \def\Hy@temp{textures}%
      \ifx\Hy@temp\Hy@driver
        \def\XR@ext{pdf}%
      \fi
    \fi
    \typeout{*hyperref using default driver \Hy@driver*}%
  \else
    \typeout{*hyperref using driver \Hy@driver*}%
  \fi
  \input{\Hy@driver.def}%
  \let\@unprocessedoptions\relax
  \Hy@RestoreCatcodes
}
\Hy@DisableOption{tex4ht}
\Hy@DisableOption{pdftex}
\Hy@DisableOption{dvipdf}
\Hy@DisableOption{nativepdf}
\Hy@DisableOption{dvipdfm}
\Hy@DisableOption{pdfmark}
\Hy@DisableOption{dvips}
\Hy@DisableOption{hypertex}
\Hy@DisableOption{vtex}
\Hy@DisableOption{vtexpdfmark}
\Hy@DisableOption{dviwindo}
```

```
\Hy@DisableOption{dvipsone}
\Hy@DisableOption{textures}
\Hy@DisableOption{latex2html}
\Hy@DisableOption{ps2pdf}
\Hy@DisableOption{xetex}
```

15.1.2 Bookmarks

```
\def\WriteBookmarks{0}
\def\@bookmarkopenstatus#1{%
  \ifHy@bookmarksopen
```

The purpose of the `\@firstofone`-number-space-construct is that no `\relax` will be inserted by TEX before the `\else`:

```
    \ifnum#1<\expandafter\@firstofone\expandafter
             {\number\@bookmarksopenlevel} % explicit space
    \else
      -%
    \fi
  \else
    -%
  \fi
}
\ifHy@bookmarks
  \Hy@Info{Bookmarks ON}%
  \ifx\@pdfpagemode\@empty
    \def\@pdfpagemode{UseOutlines}%
  \fi
\else
  \def\@bookmarkopenstatus#1{}%
  \Hy@Info{Bookmarks OFF}%
  \AtEndOfPackage{%
    \global\let\ReadBookmarks\relax
    \global\let\WriteBookmarks\relax
  }
  \ifx\@pdfpagemode\@empty
    \def\@pdfpagemode{UseNone}%
  \fi
\fi
\Hy@DisableOption{bookmarks}
```

`\Hy@colorlink` expects a macro as argument. It contains the color specification.

```
\AtBeginDocument{%
  \ifHy@colorlinks
    \ifHy@typexml\else\RequirePackage{color}\fi
    \def\Hy@colorlink#1{%
      \begingroup
        \expandafter\Hy@colorscan\expandafter#1#1\@nil%
    }%
    \def\Hy@colorscan#1{%
      \@ifnextchar[% ]
      {%
        \Hy@@colorscan
      }{%
        \expandafter\color\expandafter#1\@car{}%
      }%
    }%
    \def\Hy@@colorscan#1\@nil{\color#1}%
    \def\Hy@endcolorlink{\endgroup}%
```

```
    \Hy@Info{Link coloring ON}%
  \else
    \ifHy@frenchlinks
      \def\Hy@colorlink#1{\begingroup\fontshape{sc}\selectfont}%
      \def\Hy@endcolorlink{\endgroup}%
      \Hy@Info{French linking ON}%
    \else
```

for grouping consistency:

```
      \def\Hy@colorlink#1{\begingroup}%
      \def\Hy@endcolorlink{\endgroup}%
      \Hy@Info{Link coloring OFF}%
    \fi
  \fi
  \Hy@DisableOption{colorlinks}%
  \Hy@DisableOption{frenchlinks}%
  \ifHy@texht
    \long\def\@firstoffive#1#2#3#4#5{#1}%
    \long\def\@secondoffive#1#2#3#4#5{#2}%
    \long\def\@thirdoffive#1#2#3#4#5{#3}%
    \long\def\@fourthoffive#1#2#3#4#5{#4}%
    \long\def\@fifthoffive#1#2#3#4#5{#5}%
    \providecommand*\@safe@activestrue{}%
    \providecommand*\@safe@activesfalse{}%
    \def\T@ref#1{%
      \Hy@safe@activestrue
      \expandafter\@setref\csname r@#1\endcsname\@firstoffive{#1}%
      \Hy@safe@activesfalse
    }%
    \def\T@pageref#1{%
      \Hy@safe@activestrue
      \expandafter\@setref\csname r@#1\endcsname\@secondoffive{#1}%
      \Hy@safe@activesfalse
    }%
  \else
    \ifHy@typexml\else\RequirePackage{nameref}\fi
  \fi
  \DeclareRobustCommand\ref{\@ifstar\@refstar\T@ref}%
  \DeclareRobustCommand\pageref{%
    \@ifstar\@pagerefstar\T@pageref
  }%
}
\AfterBeginDocument{%
  \ifHy@texht
  \else
    \ReadBookmarks
  \fi
}
\ifHy@backref
  \RequirePackage{backref}
\else
  \let\Hy@backout\@gobble
\fi
\Hy@DisableOption{backref}
\Hy@DisableOption{pagebackref}
\Hy@activeanchorfalse
```

16 User hypertext macros

We need to normalise all user commands taking a URL argument; Within the argument the following special definitions apply: \#, \%, ~ produce #, %, ~ respectively. for consistency \~ produces ~ as well. At the *top level only* ie not within the argument of another command, you can use # and % unescaped, to produce themselves. even if, say, # is entered as # it will be converted to \# so it does not die if written to an aux file etc. \# will write as # locally while making \specials.

```
\begingroup
  \endlinechar=-1
  \catcode`\^^M\active
  \catcode`\%\active
  \catcode`\#\active
  \catcode`\_\active
  \catcode`\$\active
  \gdef\hyper@normalise{
    \begingroup
    \catcode`\^^M\active
    \def^^M{ }
    \catcode`\%\active
    \let%\@percentchar
    \let\%\@percentchar
    \catcode`\#\active
    \def#{\hyper@hash}
    \def\#{\hyper@hash}
    \@makeother\&
    \edef\textunderscore{\string_}
    \let\_\textunderscore
    \catcode`\_\active
    \let_\textunderscore
    \let~\hyper@tilde
    \let\~\hyper@tilde
    \let\textasciitilde\hyper@tilde
    \let\\\@backslashchar
    \edef${\string$}
    \Hy@safe@activestrue
    \hyper@n@rmalise
  }
  \catcode`\#=6
  \gdef\hyper@n@rmalise#1#2{
    \edef\Hy@tempa{
      \endgroup
      \noexpand#1{\Hy@RemovePercentCr#2%^^M\@nil}
    }
    \Hy@tempa
  }
  \gdef\Hy@RemovePercentCr#1%^^M#2\@nil{
    #1
    \ifx\limits#2\limits
    \else
      \Hy@ReturnAfterFi{
        \Hy@RemovePercentCr #2\@nil
      }
    \fi
  }
\endgroup
\providecommand*\hyper@chars{%
```

```
  \let\#\hyper@hash
  \let\%\@percentchar
}
\def\hyperlink#1#2{%
  \hyper@@link{}{#1}{#2}%
}
\DeclareRobustCommand*{\href}{\hyper@normalise\href@}
\begingroup
  \catcode`\$=6
  \catcode`\#=12
  \gdef\href@$1{\expandafter\href@split$1##\\}
  \gdef\href@split$1#$2#$3\\{%
    \hyper@@link{$1}{$2}%
  }
\endgroup
```

Load package `url.sty` and save the meaning of the original `\url` in `\nolinkurl`.

```
\RequirePackage{url}
\let\HyOrg@url\url
\def\Hurl{\begingroup \Url}
\let\nolinkurl\Hurl
\DeclareRobustCommand*{\url}{\hyper@normalise\url@}
\def\url@#1{\hyper@linkurl{\Hurl{#1}}{#1}}
\DeclareRobustCommand*{\hyperimage}{\hyper@normalise\hyper@image}
\providecommand\hyper@image[2]{#2}
\def\hypertarget#1#2{%
  \ifHy@nesting
    \hyper@@anchor{#1}{#2}%
  \else
    \hyper@@anchor{#1}{\relax}#2%
  \fi
}
```

`\hyperref` is more complicated, as it includes the concept of a category of link, used to make the name. This is not really used in this package. `\hyperdef` sets up an anchor in the same way. They each have three parameters of category, linkname, and marked text, and `\hyperref` also has a first parameter of URL. If there is an optional first parameter to `\hyperdef`, it is the name of a LaTeX label which can be used in a short form of `\hyperref` later, to avoid remembering the name and category.

```
\DeclareRobustCommand*{\hyperref}{%
  \@ifnextchar[{\Hy@babelnormalise\label@hyperref}\@hyperref
}
\def\Hy@babelnormalise#1[#2]{%
  \begingroup
    \Hy@safe@activestrue
    \edef\Hy@tempa{%
      \endgroup
      \noexpand#1[{#2}]%
    }%
  \Hy@tempa
}
\def\@hyperref{\hyper@normalise\@@hyperref}
\def\@@hyperref#1#2#3{%
  \edef\ref@one{\ifx\\#2\\\else#2.\fi#3}%
  \expandafter\tryhyper@link\ref@one\\{#1}%
}
```

```
\def\tryhyper@link#1\\#2{%
 \hyper@@link{#2}{#1}%
}
\def\hyperdef{\@ifnextchar[{\label@hyperdef}{\@hyperdef}}
\def\@hyperdef#1#2#3{%, category, name, text
  \ifHy@nesting
    \hyper@@anchor{#1.#2}{#3}%
  \else
    \hyper@@anchor{#1.#2}{\relax}#3%
  \fi
}
```

We also have a need to give a LaTeX *label* to a hyper reference, to ease the pain of referring to it later.

```
\def\label@hyperref[#1]{%
  \expandafter\label@@hyperref\csname r@#1\endcsname{#1}%
}%
\def\label@@hyperref#1#2#3{%
  \ifx#1\relax
    \protect\G@refundefinedtrue
    \@latex@warning{%
      Hyper reference `#2' on page \thepage \space undefined%
    }%
    \hyper@@link{}{??}{#3}%
  \else
    \hyper@@link{\expandafter\@fifthoffive#1}%
      {\expandafter\@fourthoffive#1\@empty\@empty}{#3}%
  \fi
}
\def\label@hyperdef[#1]#2#3#4{% label name, category, name,
                                % anchor text
  \@bsphack
  \if@filesw
    \protected@write\@auxout{}%
      {\string\newlabel{#1}{{}{}{}\##2.#3}}%
  \fi
  \@esphack
  \ifHy@nesting
    \hyper@@anchor{#2.#3}{#4}%
  \else
    \hyper@@anchor{#2.#3}{\relax}#4%
  \fi
}
```

17 Underlying basic hypertext macros

Links have an optional type, a filename (possibly a URL), an internal name, and some marked text. (Caution: the internal name may contain babel shorthand characters.) If the second parameter is empty, its an internal link, otherwise we need to open another file or a URL. A link start has a type, and a URL.

```
\def\hyper@@link{\let\Hy@reserved@a\relax
  \@ifnextchar[{\hyper@link@}{\hyper@link@[link]}%
}
\def\hyper@link@[#1]#2#3#4{%
  \begingroup
    \protected@edef\Hy@tempa{#2}%
```

```
    \Hy@safe@activestrue
    \edef\x{#3}%
    \ifx\Hy@tempa\@empty
      \toks0{\hyper@link{#1}}%
    \else
      \toks0{\expandafter\hyper@readexternallink#2\\{#1}}%
    \fi
    \toks1{{#4}}%
    \edef\x{\endgroup
      \the\toks0 {\x}\the\toks1 %
    }%
  \x
}
```

The problem here is that the first (URL) parameter may be a local `file:` reference (in which case some browsers treat it differently) or a genuine URL, in which case we'll have to activate a real Web browser. Note that a simple name is also a URL, as that is interpreted as a relative file name. We have to worry about # signs in a local file as well.

```
\def\hyper@readexternallink#1\\#2#3#4{%
```

Parameters are:

1. The URL or file name
2. The type
3. The internal name
4. The link string

We need to get the 1st parameter properly expanded, so we delimit the arguments rather than passing it inside a group.

```
  \expandafter\@hyper@readexternallink{#2}{#3}{#4}#1::\\{#1}%
}
```

Now (potentially), we are passed: 1) The link type 2) The internal name, 3) the link string, 4) the URL type (http, mailto, file etc), 5) the URL details 6) anything after a real : in the URL 7) the whole URL again

```
\def\@pdftempwordfile{file}%
\def\@pdftempwordrun{run}%
\def\@hyper@readexternallink#1#2#3#4:#5:#6\\#7{%
```

If there are no colons at all (#6 is blank), its a local file; if the URL type (#4) is blank, its probably a Mac filename, so treat it like a `file:` URL. The only flaw is if its a relative Mac path, with several colon-separated elements — then we lose. Such names must be prefixed with an explicit `dvi:`

```
  \ifx\\#6\\%
    \expandafter\@hyper@linkfile file:#7\\{#3}{#2}%
  \else
    \ifx\\#4\\%
      \expandafter\@hyper@linkfile file:#7\\{#3}{#2}%
    \else
```

If the URL type is 'file', pass it for local opening

```
      \def\@pdftempa{#4}%
      \ifx\@pdftempa\@pdftempwordfile
        \expandafter\@hyper@linkfile#7\\{#3}{#2}%
      \else
```

if it starts 'run:', its to launch an application.

```
        \ifx\@pdftempa\@pdftempwordrun
          \expandafter\@hyper@launch#7\\{#3}{#2}%
        \else
```

otherwise its a URL

```
          \hyper@linkurl{#3}{#7\ifx\\#2\\\else\hyper@hash#2\fi}%
        \fi
      \fi
    \fi
  \fi
}
```

By default, turn `run:` into `file:`

```
\def\@hyper@launch run:#1\\#2#3{% filename, anchor text, linkname
   \hyper@linkurl{#2}{\Hy@linkfileprefix#1\ifx\\#3\\\else\hyper@hash#3\fi}%
}
```

D P Story ¡story@uakron.edu¿ pointed out that relative paths starting .. fell over. Switched to using `\filename@parse` to solve this.

```
\def\@hyper@linkfile file:#1\\#2#3{%
    %file url,link string, name
  \filename@parse{#1}%
  \ifx\filename@ext\relax
    \edef\filename@ext{\XR@ext}%
  \fi
  \def\use@file{\filename@area\filename@base.\filename@ext}%
  \ifx\filename@ext\XR@ext
    \hyper@linkfile{#2}{\use@file}{#3}%
  \else
    \ifx\@baseurl\@empty
      \hyper@linkurl{#2}{%
        \Hy@linkfileprefix\use@file\ifx\\#3\\\else\hyper@hash#3\fi
      }%
    \else
      \hyper@linkurl{#2}{\use@file\ifx\\#3\\\else\hyper@hash#3\fi}%
    \fi
  \fi
}
```

Anchors have a name, and marked text. We have to be careful with the marked text, as if we break off part of something to put a `\special` around it, all hell breaks loose. Therefore, we check the category code of the first token, and only proceed if its safe. Tanmoy sorted this out.

A curious case arises if the original parameter was in braces. That means that #2 comes here a multiple letters, and the `noexpand` just looks at the first one, putting the rest in the output. Yuck.

```
\long\def\hyper@@anchor#1#2{\@hyper@@anchor#1\relax#2\relax}
\long\def\@hyper@@anchor#1\relax#2#3\relax{%
  \ifx\\#1\\%
    #2\Hy@WarningNoLine{empty link? #1: #2#3}%
  \else
    \def\anchor@spot{#2#3}%
    \let\put@me@back\@empty
    \ifx\relax#2\relax
    \else
      \ifHy@nesting
      \else
```

```
        \ifcat a\noexpand#2\relax
        \else
          \ifcat 0\noexpand#2 \relax
          \else
%            \typeout{Anchor start is not alphanumeric %
%              on input line\the\inputlineno%
%            }%
            \let\anchor@spot\@empty
            \def\put@me@back{#2#3}%
          \fi
        \fi
      \fi
    \fi
    \ifHy@activeanchor
      \anchor@spot
    \else
      \hyper@anchor{#1}%
    \fi
    \expandafter\put@me@back
  \fi
  \let\anchor@spot\@empty
}
```

18 Compatibility with the *LaTeX2html* package

Map our macro names on to Nikos', so that documents prepared for that system will work without change.

Note, however, that the whole complicated structure for segmenting documents is not supported; it is assumed that the user will load `html.sty` first, and then `hyperref.sty`, so that the definitions in `html.sty` take effect, and are then overridden in a few circumstances by this package.

```
\let\htmladdimg\hyperimage
\def\htmladdnormallink#1#2{\href{#2}{#1}}
\def\htmladdnormallinkfoot#1#2{\href{#2}{#1}\footnote{#2}}
\def\htmlref#1#2{% anchor text, label
  \label@hyperref[{#2}]{#1}%
}
```

This is really too much. The LaTeX2html package defines its own `\hyperref` command, with a different syntax. Was this always here? Its weird, anyway. We interpret it in the 'printed' way, since we are about fidelity to the page.

```
\def\@@latextohtmlX{%
  \let\hhyperref\hyperref
  \def\hyperref##1##2##3##4{% anchor text for HTML
                     % text to print before label in print
                     % label
                     % post-label text in print
    ##2\ref{##4}##3%
  }%
}
```

19 Forms creation

Allow for creation of PDF or HTML forms. The effects here are limited somewhat by the need to support both output formats, so it may not be as clever as something which only

wants to make PDF forms.

I could not have started this without the encouragement of T V Raman.

```
\newif\ifFld@checked
\newif\ifFld@hidden
\newif\ifFld@multiline
\newif\ifFld@readonly
\newif\ifFld@disabled
\newif\ifFld@password
\newif\ifFld@radio
\newif\ifFld@combo
\newif\ifFld@popdown
\Fld@multilinefalse
\Fld@checkedfalse
\Fld@hiddenfalse
\Fld@readonlyfalse
\Fld@disabledfalse
\Fld@radiofalse
\Fld@combofalse
\Fld@popdownfalse
\Fld@passwordfalse
\newcount\Fld@menulength
\newdimen\Field@Width
\newdimen\Fld@charsize
\Fld@charsize=10\p@
\def\Fld@maxlen{0}
\def\Fld@align{0}
\def\Fld@color{0 0 0}
\def\Fld@bcolor{1 1 1}
\def\Fld@bordercolor{1 0 0}
\def\Fld@bordersep{1\p@}
\def\Fld@borderwidth{1}
\def\Fld@borderstyle{S}
\def\Fld@cbsymbol{4}
\newtoks\Choice@toks
\def\Form{\@ifnextchar[{\@Form}{\@Form[]}}
\def\endForm{\@endForm}
\newif\ifForm@html
\Form@htmlfalse
\def\Form@boolkey#1#2{%
  \csname Form@#2\ifx\relax#1\relax true\else#1\fi\endcsname
}
\define@key{Form}{action}{%
  \hyper@normalise\Hy@DefFormAction{#1}%
}
\def\Hy@DefFormAction{\def\Form@action}
\def\enc@@html{html}
\define@key{Form}{encoding}{%
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\enc@@html
    \Form@htmltrue
  \else
    \typeout{hyperref: form 'encoding' key set to #1 %
      -- unknown type%
    }%
    \Form@htmlfalse
  \fi
}
```

```
\define@key{Form}{method}{%
  \def\Form@method{#1}%
}
\def\Form@method{}
\def\Field@boolkey#1#2{%
  \csname Fld@#2\ifx\relax#1\relax true\else#1\fi\endcsname
}
\newtoks\Field@toks
\Field@toks={ }%
\def\Field@addtoks#1#2{%
  \edef\@processme{\Field@toks{\the\Field@toks\space #1="#2"}}%
  \@processme
}
\def\Fld@checkequals#1=#2=#3\\{%
  \def\@currDisplay{#1}%
  \ifx\\#2\\%
    \def\@currValue{#1}%
  \else
    \def\@currValue{#2}%
  \fi
}
\define@key{Field}{loc}{%
  \def\Fld@loc{#1}%
}
\define@key{Field}{multiline}[true]{%
  \lowercase{\Field@boolkey{#1}}{multiline}%
}
\define@key{Field}{checked}[true]{%
  \lowercase{\Field@boolkey{#1}}{checked}%
}
\define@key{Field}{hidden}[true]{%
  \lowercase{\Field@boolkey{#1}}{hidden}%
}
\define@key{Field}{readonly}[true]{%
  \lowercase{\Field@boolkey{#1}}{readonly}%
}
\define@key{Field}{disabled}[true]{%
  \lowercase{\Field@boolkey{#1}}{disabled}%
}
\define@key{Field}{password}[true]{%
  \lowercase{\Field@boolkey{#1}}{password}%
}
\define@key{Field}{radio}[true]{%
  \lowercase{\Field@boolkey{#1}}{radio}%
}
\define@key{Field}{combo}[true]{%
  \lowercase{\Field@boolkey{#1}}{combo}%
}
\define@key{Field}{popdown}[true]{%
  \lowercase{\Field@boolkey{#1}}{popdown}%
}
\define@key{Field}{accesskey}{%
  \Field@addtoks{accesskey}{#1}%
}
\define@key{Field}{tabkey}{%
  \Field@addtoks{tabkey}{#1}%
}
```

```
\define@key{Field}{name}{%
  \def\Fld@name{#1}%
}
\define@key{Field}{width}{%
  \def\Fld@width{#1}%
  \Field@Width#1\setbox0=\hbox{m}%
}
\define@key{Field}{maxlen}{%
  \def\Fld@maxlen{#1}%
}
\define@key{Field}{menulength}{%
  \Fld@menulength=#1\relax
}
\define@key{Field}{height}{%
  \def\Fld@height{#1}%
}
\define@key{Field}{charsize}{%
  \Fld@charsize#1%
}
\define@key{Field}{fillcolor}{%
  \def\Fld@fillcolor{#1}%
}
\define@key{Field}{borderwidth}{%
  \def\Fld@borderwidth{#1}%
}
\define@key{Field}{borderstyle}{%
  \def\Fld@borderstyle{#1}%
}
\define@key{Field}{bordersep}{%
  \def\Fld@bordersep{#1}%
}
\define@key{Field}{default}{%
  \def\Fld@default{#1}%
}
\define@key{Field}{align}{%
  \def\Fld@align{#1}%
}
\define@key{Field}{value}{%
  \def\Fld@value{#1}%
}
\define@key{Field}{checkboxsymbol}{%
  \def\Fld@cbsymbol{#1}%
}
\define@key{Field}{backgroundcolor}{%
  \Hy@fieldcolor{bcolor}{#1}{ }{backgroundcolor}%
}
\define@key{Field}{bordercolor}{%
  \Hy@fieldcolor{bordercolor}{#1}{ }{bordercolor}%
}
\define@key{Field}{color}{%
  \Hy@fieldcolor{color}{#1}{ }{color}%
}
\def\Hy@fieldcolor#1#2#3#4{%
  \begingroup
    \Hy@safe@activestrue
    \@ifundefined{XC@edef}{\edef}{\XC@edef}\x{#2}%
    \expandafter\Hy@FieldCheckColorSpec\x#3#3\@nil{#1}{#2}{#4}%
```

```
}
\def\Hy@FieldCheckColorSpec#1 #2 #3\@nil#4#5#6{%
  \ifx\\#3\\%
    \@ifundefined{XC@bordercolor}{%
      \Hy@Warning{%
          Unsupported color specification (#6).\MessageBreak
          Load package 'xcolor' (version >= 2.11) first.\MessageBreak
          Ignoring color specification%
      }%
      \endgroup
    }{%
      \endgroup
      \XC@bordercolor{temp}{#5}%
      \expandafter\let\csname Fld@#4\endcsname\@tempbordercolor
    }%
  \else
    \endgroup
    \@namedef{Fld@#4}{#5}%
  \fi
}
\def\Fld@format@code{}
\def\Fld@validate@code{}
\def\Fld@calculate@code{}
\def\Fld@keystroke@code{}
\def\Fld@onfocus@code{}
\def\Fld@onblur@code{}
\def\Fld@onmousedown@code{}
\def\Fld@onmouseup@code{}
\def\Fld@onenter@code{}
\def\Fld@onexit@code{}
\define@key{Field}{keystroke}{%
  \def\Fld@keystroke@code{#1}%
}
\define@key{Field}{format}{%
  \def\Fld@format@code{#1}%
}
\define@key{Field}{validate}{%
  \def\Fld@validate@code{#1}%
}
\define@key{Field}{calculate}{%
  \def\Fld@calculate@code{#1}%
}
\define@key{Field}{onfocus}{%
  \def\Fld@onfocus@code{#1}%
}
\define@key{Field}{onblur}{%
  \def\Fld@onblur@code{#1}%
}
\define@key{Field}{onenter}{%
  \def\Fld@onenter@code{#1}%
}
\define@key{Field}{onexit}{%
  \def\Fld@onexit@code{#1}%
}
\define@key{Field}{onselect}{%
  \Field@addtoks{onselect}{#1}%
}
```

```
\define@key{Field}{onchange}{%
  \Field@addtoks{onchange}{#1}%
}
\define@key{Field}{onclick}{%
  \def\Fld@onclick{#1}%
  \Field@addtoks{onclick}{#1}%
}
\define@key{Field}{ondblclick}{%
  \Field@addtoks{ondblclick}{#1}%
}
\define@key{Field}{onmousedown}{%
  \Field@addtoks{onmousedown}{#1}%
}
\define@key{Field}{onmouseup}{%
  \Field@addtoks{onmouseup}{#1}%
}
\define@key{Field}{onmouseover}{%
  \Field@addtoks{onmouseover}{#1}%
}
\define@key{Field}{onmousemove}{%
  \Field@addtoks{onmousemove}{#1}%
}
\define@key{Field}{onmouseout}{%
  \Field@addtoks{onmouseout}{#1}%
}
\define@key{Field}{onkeypress}{%
  \Field@addtoks{onkeypress}{#1}%
}
\define@key{Field}{onkeydown}{%
  \Field@addtoks{onkeydown}{#1}%
}
\define@key{Field}{onkeyup}{%
  \Field@addtoks{onkeyup}{#1}%
}
%
\DeclareRobustCommand\TextField{%
  \@ifnextchar[{\@TextField}{\@TextField[]}%
}
\DeclareRobustCommand\ChoiceMenu{%
  \@ifnextchar[{\@ChoiceMenu}{\@ChoiceMenu[]}%
}
\DeclareRobustCommand\CheckBox{%
  \@ifnextchar[{\@CheckBox}{\@CheckBox[]}%
}
\DeclareRobustCommand\PushButton{%
  \@ifnextchar[{\@PushButton}{\@PushButton[]}%
}
\DeclareRobustCommand\Gauge{%
  \@ifnextchar[{\@Gauge}{\@Gauge[]}%
}
\DeclareRobustCommand\Submit{%
  \@ifnextchar[{\@Submit}{\@Submit[]}%
}
\DeclareRobustCommand\Reset{%
  \@ifnextchar[{\@Reset}{\@Reset[]}%
}
\def\LayoutTextField#1#2{% label, field
```

```
  #1 #2%
}
\def\LayoutChoiceField#1#2{% label, field
  #1 #2%
}
\def\LayoutCheckField#1#2{% label, field
  #1 #2%
}
\def\LayoutPushButtonField#1{% button
  #1%
}
\def\MakeRadioField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}
\def\MakeCheckField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}
\def\MakeTextField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}
\def\MakeChoiceField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}
\def\MakeButtonField#1{%
  \sbox0{%
    \hskip\Fld@borderwidth bp#1\hskip\Fld@borderwidth bp%
  }%
  \@tempdima\ht0
  \advance\@tempdima by \Fld@borderwidth bp
  \advance\@tempdima by \Fld@borderwidth bp
  \ht0\@tempdima
  \@tempdima\dp0
  \advance\@tempdima by \Fld@borderwidth bp
  \advance\@tempdima by \Fld@borderwidth bp
  \dp0\@tempdima
  \box0\relax
}
\def\DefaultHeightofSubmit{14pt}
\def\DefaultWidthofSubmit{2cm}
\def\DefaultHeightofReset{14pt}
\def\DefaultWidthofReset{2cm}
\def\DefaultHeightofCheckBox{\baselineskip}
\def\DefaultWidthofCheckBox{\baselineskip}
\def\DefaultHeightofChoiceMenu{\baselineskip}
\def\DefaultWidthofChoiceMenu{\baselineskip}
\def\DefaultHeightofText{\baselineskip}
\def\DefaultWidthofText{3cm}
```

20 Setup

```
\ifHy@figures
  \Hy@Info{Hyper figures ON}
\else
  \Hy@Info{Hyper figures OFF}
\fi
\ifHy@nesting
  \Hy@Info{Link nesting ON}
\else
  \Hy@Info{Link nesting OFF}
\fi
\ifHy@hyperindex
  \Hy@Info{Hyper index ON}
\else
  \Hy@Info{Hyper index OFF}
```

```
\fi
\ifHy@backref
  \Hy@Info{backreferencing ON}
\else
  \Hy@Info{backreferencing OFF}
\fi
\ifHy@colorlinks
  \Hy@Info{Link coloring ON}
\else
  \Hy@Info{Link coloring OFF}
\fi
```

21 Low-level utility macros

We need unrestricted access to the `#`, `~` and `"` characters, so make them nice macros.

```
\edef\hyper@hash{\string#}
\edef\hyper@tilde{\string~}
\edef\hyper@quote{\string"}
\let\@currentHref\@empty
\let\Hy@footnote@currentHref\@empty
```

We give the start of document a special label; this is used in backreferencing-by-section, to allow for cites before any sectioning commands. Set up PDF info.

```
\AfterBeginDocument{%
  \Hy@pdfstringtrue
  \PDF@SetupDoc
  \let\PDF@SetupDoc\@empty
  \Hy@DisableOption{pdfpagescrop}%
  \Hy@DisableOption{pdfpagemode}%
  \Hy@DisableOption{pdfnonfullscreenpagemode}%
  \Hy@DisableOption{pdfdirection}%
  \Hy@DisableOption{pdfviewarea}%
  \Hy@DisableOption{pdfviewclip}%
  \Hy@DisableOption{pdfprintarea}%
  \Hy@DisableOption{pdfprintclip}%
  \Hy@DisableOption{pdfprintscaling}%
  \Hy@DisableOption{pdfduplex}%
  \Hy@DisableOption{pdfpicktraybypdfsize}%
  \Hy@DisableOption{pdfprintpagerange}%
  \Hy@DisableOption{pdfnumcopies}%
  \Hy@DisableOption{pdfstartview}%
  \Hy@DisableOption{pdfstartpage}%
  \Hy@DisableOption{pdftoolbar}%
  \Hy@DisableOption{pdfmenubar}%
  \Hy@DisableOption{pdfwindowui}%
  \Hy@DisableOption{pdffitwindow}%
  \Hy@DisableOption{pdfcenterwindow}%
  \Hy@DisableOption{pdfdisplaydoctitle}%
  \Hy@DisableOption{pdfpagelayout}%
  \Hy@DisableOption{pdflang}%
  \Hy@DisableOption{baseurl}%
  \ifHy@texht\else\hyper@anchorstart{Doc-Start}\hyper@anchorend\fi
  \Hy@pdfstringfalse
}
```

22 Localized nullifying of package

Sometimes we just don't want the wretched package interfering with us. Define an environment we can put in manually, or include in a style file, which stops the hypertext functions doing anything. This is used, for instance, in the Elsevier classes, to stop `hyperref` playing havoc in the front matter.

```
\def\NoHyper{%
  \def\hyper@link@[##1]##2##3##4{##4}%
  \def\hyper@@anchor##1{}%
  \global\let\hyper@livelink\hyper@link
  \gdef\hyper@link##1##2##3{##3}%
  \def\hyper@anchorstart##1{}%
  \let\hyper@anchorend\@empty
  \def\hyper@linkstart##1##2{}%
  \let\hyper@linkend\@empty
  \def\hyper@linkurl##1##2{##1}%
  \def\hyper@linkfile##1##2##3{##1}%
  \let\Hy@backout\@gobble
}
\def\stop@hyper{%
  \def\hyper@link@[##1]##2##3##4{##4}%
  \let\Hy@backout\@gobble
  \def\hyper@@anchor##1{}%
  \def\hyper@link##1##2##3{##3}%
  \def\hyper@anchorstart##1{}%
  \let\hyper@anchorend\@empty
  \def\hyper@linkstart##1##2{}%
  \let\hyper@linkend\@empty
  \def\hyper@linkurl##1##2{##1}%
  \def\hyper@linkfile##1##2##3{##1}%
}
\def\endNoHyper{%
  \global\let\hyper@link\hyper@livelink
}
⟨/package⟩
```

23 Package nohyperref

This package is introduced by Sebastian Rahtz.

Package nohyperref is a dummy package that defines some low level and some top-level commands. It is done for jadetex, which calls hyperref low-level commands, but it would also be useful with people using normal hyperref, who really do not want the package loaded at all.

Some low-level commands:

```
⟨*nohyperref⟩
\let\hyper@@anchor\@gobble
\def\hyper@link#1#2#3{#3}%
\let\hyper@anchorstart\@gobble
\let\hyper@anchorend\@empty
\let\hyper@linkstart\@gobbletwo
\let\hyper@linkend\@empty
\def\hyper@linkurl#1#2{#1}%
\def\hyper@linkfile#1#2#3{#1}%
\let\PDF@SetupDoc\@empty
\let\PDF@FinishDoc\@empty
```

Some top-level commands:

```
\let\Acrobatmenu\@gobble
\let\pdfstringdefDisableCommands\@gobbletwo
\let\texorpdfstring\@firstoftwo
\let\pdfbookmark\@undefined
\newcommand\pdfbookmark[3][]{}
\let\phantomsection\@empty
\let\hypersetup\@gobble
\let\hyperbaseurl\@gobble
\let\href\@gobble
\let\hyperdef\@gobbletwo
\let\hyperlink\@gobble
\let\hypertarget\@gobble
\def\hyperref{\@ifnextchar[\@gobbleopt{\expandafter\@gobbletwo\@gobble}}
\long\def\@gobbleopt[#1]{}
\let\hyperpage\@empty
⟨/nohyperref⟩
```

24 The Mangling Of Aux and Toc Files

Some extra tests so that the hyperref package may be removed or added to a document without having to remove .aux and .toc files (this section is by David Carlisle) All the code is delayed to `\begin{document}`

```
⟨*package⟩
\AfterBeginDocument{%
```

First the code to deal with removing the hyperref package from a document.

Write some stuff into the aux file so if the next run is done without hyperref, then `\contentsline` and `\newlabel` are defined to cope with the extra arguments.

```
\if@filesw
  \ifHy@typexml
    \immediate\closeout\@mainaux
    \immediate\openout\@mainaux\jobname.aux
    \immediate\write\@auxout{<relaxxml>\relax}%
  \fi
  \immediate\write\@auxout{%
    \string\ifx\string\hyper@anchor\string\@undefined^^J%
      \global\let\string\oldcontentsline\string\contentsline^^J%
      \gdef\string\contentsline%
        \string#1\string#2\string#3\string#4{%
        \string\oldcontentsline%
          {\string#1}{\string#2}{\string#3}}^^J%
      \global\let\string\oldnewlabel\string\newlabel^^J%
      \gdef\string\newlabel\string#1\string#2{%
         \string\newlabelxx{\string#1}\string#2}^^J%
      \gdef\string\newlabelxx%
         \string#1\string#2\string#3\string#4\string#5\string#6{%
         \string\oldnewlabel{\string#1}{{\string#2}{\string#3}}}^^J%
```

But the new aux file will be read again at the end, with the normal definitions expected, so better put things back as they were.

```
      \string\AtEndDocument{%
        \let\string\contentsline\string\oldcontentsline^^J%
        \let\string\newlabel\string\oldnewlabel}^^J%
```

If the document is being run with hyperref put this definition into the aux file, so we can spot it on the next run.

```
      \string\else^^J%
        \global\let\string\hyper@last\relax^^J%
      \string\fi^^J%
    }%
  \fi
```

Now the code to deal with adding the hyperref package to a document with aux and toc written the standard way.

If hyperref was used last time, do nothing. If it was not used, or an old version of hyperref was used, don't use that TOC at all but generate a warning. Not ideal, but better than failing with pre-5.0 hyperref TOCs.

```
  \ifx\hyper@last\@undefined
    \def\@starttoc#1{%
      \begingroup
        \makeatletter
        \IfFileExists{\jobname.#1}{%
          \Hy@WarningNoLine{%
            old #1 file detected, not used; run LaTeX again%
          }%
        }{}%
        \if@filesw
          \expandafter\newwrite\csname tf@#1\endcsname
          \immediate\openout\csname tf@#1\endcsname \jobname.#1\relax
        \fi
        \@nobreakfalse
      \endgroup
    }%
    \def\newlabel#1#2{\@newl@bel r{#1}{#2{}{}{}{}}}%
  \fi
}
```

25 Title strings

If options `pdftitle` and `pdfauthor` are not used, these informations for the pdf information dictionary can be extracted by the nd

```
\ifHy@usetitle
  \let\HyOrg@title\title
  \let\HyOrg@author\author
  \def\title{\@ifnextchar[{\Hy@scanopttitle}{\Hy@scantitle}}%
  \def\Hy@scanopttitle[#1]{%
    \gdef\Hy@title{#1}%
    \HyOrg@title[{#1}]%
  }%
  \def\Hy@scantitle#1{%
    \gdef\Hy@title{#1}%
    \HyOrg@title{#1}%
  }
  \def\author{\@ifnextchar[{\Hy@scanoptauthor}{\Hy@scanauthor}}%
  \def\Hy@scanoptauthor[#1]{%
    \gdef\Hy@author{#1}%
    \HyOrg@author[{#1}]%
  }%
  \def\Hy@scanauthor#1{%
    \gdef\Hy@author{#1}%
```

```
    \HyOrg@author{#1}%
  }
```

The case, that or re given before hyperref is loaded, is much more complicate, because LaTeX initializes the macros title and author with LaTeX error and warning messages.

```
  \begingroup
    \def\process@me#1\@nil#2{%
      \expandafter\let\expandafter\x\csname @#2\endcsname
      \edef\y{\expandafter\strip@prefix\meaning\x}%
      \def\c##1#1##2\@nil{%
        \ifx\\##1\\%
        \else
         \expandafter\gdef\csname Hy@#2\expandafter\endcsname
              \expandafter{\x}%
        \fi
      }%
      \expandafter\c\y\relax#1\@nil
    }%
    \expandafter\process@me\string\@latex@\@nil{title}%
    \expandafter\process@me\string\@latex@\@nil{author}%
  \endgroup
\fi
\Hy@DisableOption{pdfusetitle}
```

Macro `\Hy@UseMaketitleInfos` is used in the driver files, before the information entries are used.

The newline macro `\newline` or `\\` is much more complicate. In the title a good replacement can be a space, but can be already a space after `\\` in the title string. So this space is removed by scanning for the next non-empty argument.

In the macro `\author` the newline can perhaps separate the different authors, so the newline expands here to a comma with space.

The possible arguments such as space or the optional argument after the newline macros are not detected.

```
\def\Hy@UseMaketitleString#1{%
  \@ifundefined{Hy@#1}{}{%
    \begingroup
      \let\Hy@saved@hook\pdfstringdefPreHook
      \pdfstringdefDisableCommands{%
        \expandafter\let\expandafter\\\csname Hy@newline@#1\endcsname
        \let\newline\\%
      }%
      \expandafter\ifx\csname @pdf#1\endcsname\@empty
        \expandafter\pdfstringdef\csname @pdf#1\endcsname{%
          \csname Hy@#1\endcsname\@empty
        }%
      \fi
      \global\let\pdfstringdefPreHook\Hy@saved@hook
    \endgroup
  }%
}
\def\Hy@newline@title#1{ #1}
\def\Hy@newline@author#1{, #1}
\def\Hy@UseMaketitleInfos{%
  \Hy@UseMaketitleString{title}%
  \Hy@UseMaketitleString{author}%
}
```

26 Page numbers

This stuff is done by Heiko Oberdiek.

26.1 PDF /PageLabels

Internal macros of this module are marked with \HyPL@.

```
\ifHy@pagelabels
  \begingroup\expandafter\expandafter\expandafter\endgroup
  \expandafter\ifx\csname thepage\endcsname\relax
    \Hy@pagelabelsfalse
    \Hy@WarningNoLine{%
      Option 'pdfpagelabels' is turned off\MessageBreak
      because \string\thepage\space is undefined%
    }%
    \csname fi\endcsname
    \csname iffalse\expandafter\endcsname
  \fi
```

\thispdfpagelabel The command \thispdfpagelabel allows to label a special page without the redefinition of \thepage for the page.

```
\def\thispdfpagelabel#1{%
  \gdef\HyPL@thisLabel{#1}%
}
\global\let\HyPL@thisLabel\relax
```

\HyPL@Labels The page labels are collected in \HyPL@Labels and set at the end of the document.

```
\def\HyPL@Labels{}
```

\Hy@abspage We have to know the the absolute page number and introduce a new counter for that.

```
\newcount\Hy@abspage
\Hy@abspage=0
```

For comparisons with the values of the previous page, some variables are needed:

```
\def\HyPL@LastType{init}%
\def\HyPL@LastNumber{0}%
\def\HyPL@LastPrefix{}%
```

Definitions for the PDF names of the LaTeX pendents.

```
\def\HyPL@arabic{D}%
\def\HyPL@Roman{R}%
\def\HyPL@roman{r}%
\def\HyPL@Alph{A}%
\def\HyPL@alph{a}%
```

\HyPL@EveryPage If a page is shipout and the page number is known, \HyPL@EveryPage has to be called. It stores the current page label.

```
\def\HyPL@EveryPage{%
  \begingroup
    \ifx\HyPL@thisLabel\relax
      \let\HyPL@page\thepage
    \else
      \let\HyPL@page\HyPL@thisLabel
      \global\let\HyPL@thisLabel\relax
    \fi
    \let\HyPL@Type\relax
```

```
    \ifnum\the\c@page>0
      \expandafter\HyPL@CheckThePage\HyPL@page\@nil
    \fi
    \let\Hy@temp Y%
    \ifx\HyPL@Type\HyPL@LastType
    \else
      \let\Hy@temp N%
    \fi
    \ifx\HyPL@Type\relax
       \pdfstringdef\HyPL@Prefix{\HyPL@page}%
    \else
       \pdfstringdef\HyPL@Prefix\HyPL@Prefix
    \fi
    \ifx\HyPL@Prefix\HyPL@LastPrefix
    \else
      \let\Hy@temp N%
    \fi
    \if Y\Hy@temp
      \advance\c@page by -1
      \ifnum\HyPL@LastNumber=\the\c@page\relax
      \else
        \let\Hy@temp N%
      \fi
      \Hy@StepCount\c@page
    \fi
    \if N\Hy@temp
      \ifx\HyPL@Type\relax
        \HyPL@StorePageLabel{/P (\HyPL@Prefix)}%
      \else
        \HyPL@StorePageLabel{%
          \ifx\HyPL@Prefix\@empty
          \else
            /P (\HyPL@Prefix)
          \fi
          /S /\csname HyPL\HyPL@Type\endcsname
          \ifnum\the\c@page=1
          \else
            \space/St \the\c@page
          \fi
        }%
      \fi
    \fi
    \xdef\HyPL@LastNumber{\the\c@page}%
    \global\let\HyPL@LastType\HyPL@Type
    \global\let\HyPL@LastPrefix\HyPL@Prefix
  \endgroup
  \Hy@GlobalStepCount\Hy@abspage
}
```

`\HyPL@CheckThePage` Macro `\HyPL@CheckThePage` calls `\HyPL@@CheckThePage` that does the job.

```
\def\HyPL@CheckThePage#1\@nil{%
  \HyPL@@CheckThePage{#1}#1\csname\endcsname\c@page\@nil
}
```

`\HyPL@@CheckThePage` The first check is, is `\thepage` is defined such as in LaTeX, e. g.: `\csname @arabic\endcsname\c@page`. In the current implemenation the check fails, if there is another `\csname` before.

The second check tries to detect `\arabic{page}` at the end of the definition text of

\thepage.

```
\def\HyPL@@CheckThePage#1#2\csname#3\endcsname\c@page#4\@nil{%
  \def\Hy@tempa{#4}%
  \def\Hy@tempb{\csname\endcsname\c@page}%
  \ifx\Hy@tempa\Hy@tempb
    \expandafter\ifx\csname HyPL#3\endcsname\relax
    \else
      \def\HyPL@Type{#3}%
      \def\HyPL@Prefix{#2}%
    \fi
  \else
    \begingroup
      \let\Hy@next\endgroup
      \let\HyPL@found\@undefined
      \def\arabic{\HyPL@Format{arabic}}%
      \def\Roman{\HyPL@Format{Roman}}%
      \def\roman{\HyPL@Format{roman}}%
      \def\Alph{\HyPL@Format{Alph}}%
      \def\alph{\HyPL@Format{alph}}%
      \protected@edef\Hy@temp{#1}%
      \ifx\HyPL@found\relax
        \toks@\expandafter{\Hy@temp}%
        \edef\Hy@next{\endgroup
          \noexpand\HyPL@@@CheckThePage\the\toks@
             \noexpand\HyPL@found\relax\noexpand\@nil
        }%
      \fi
    \Hy@next
  \fi
}
```

`\HyPL@Format` The help macro `\HyPL@Format` is executed while a `\protected@edef` in the second check method of `\HyPL@@CheckPage`. The first occurences of, for example, `\arabic{page}` is marked by `\HyPL@found` that is also defined by `\csname`.

```
\def\HyPL@Format#1#2{%
  \ifx\HyPL@found\@undefined
    \expandafter\ifx\csname c@#2\endcsname\c@page
      \expandafter\noexpand\csname HyPL@found\endcsname{#1}%
    \else
      \expandafter\noexpand\csname#1\endcsname{#2}%
    \fi
  \else
    \expandafter\noexpand\csname#1\endcsname{#2}%
  \fi
}
```

`\HyPL@@@CheckThePage` If the second check method is successful, `\HyPL@@@CheckThePage` scans the result of `\HyPL@Format` and stores the found values.

```
\def\HyPL@@@CheckThePage#1\HyPL@found#2#3\@nil{%
  \def\Hy@tempa{#3}%
  \def\Hy@tempb{\HyPL@found\relax}%
  \ifx\Hy@tempa\Hy@tempb
    \def\HyPL@Type{@#2}%
    \def\HyPL@Prefix{#1}%
  \fi
}
```

\HyPL@StorePageLabel Dummy for drivers that does not support /PageLabel.

```
\providecommand*{\HyPL@StorePageLabel}[1]{}
```

\HyPL@Useless The /PageLabels entry does not make sense, if the absolute page numbers and the page labels are the same. Then \HyPL@Labels has the meaning of \HyPL@Useless.

```
\def\HyPL@Useless{0 << /S /D >> }%
\@onelevel@sanitize\HyPL@Useless
```

\HyPL@SetPageLabels The page labels are written to the PDF cataloge. The command \Hy@PutCatalog is defined in the driver files.

```
\def\HyPL@SetPageLabels{%
  \@onelevel@sanitize\HyPL@Labels
  \ifx\HyPL@Labels\@empty
  \else
    \ifx\HyPL@Labels\HyPL@Useless
    \else
      \Hy@PutCatalog{/PageLabels << /Nums [\HyPL@Labels] >>}%
    \fi
  \fi
}
```

\HyPL@EveryPage Without option 'pdfpagelabels' we need a dummy for \HyPL@EveryPage.

```
\else
  \let\HyPL@EveryPage\@empty
\fi
```

Option 'pdfpagelabels' has been used and is now disabled.

```
\Hy@DisableOption{pdfpagelabels}
```

⟨/package⟩

26.1.1 pdfTeX and VTeX

Because of pdfTeX's \pdfcatalog command the /PageLabels entry can set at end of document in the first run.

\Hy@PutCatalog

```
⟨pdftex⟩\let\Hy@PutCatalog\pdfcatalog
```

The code for VTeX is more complicate, because it does not allow the direct access to the /Catalog object. The command scans its argument and looks for a /PageLabels entry.

VTeX 6.59g is the first version, that implements \special{!pdfpagelabels...}. For this version \VTeXversion reports 660.

```
⟨*vtex⟩
\edef\Hy@VTeXversion{%
  \ifx\VTeXversion\@undefined
    \z@
  \else
    \ifx\VTeXversion\relax
      \z@
    \else
      \VTeXversion
    \fi
  \fi
}
\begingroup
```

```
  \ifnum\Hy@VTeXversion<660 %
    \gdef\Hy@PutCatalog#1{%
      \Hy@WarningNoLine{%
        VTeX 6.59g or above required for pdfpagelabels%
      }%
    }
  \else
    \gdef\Hy@PutCatalog#1{%
      \Hy@vt@PutCatalog#1/PageLabels <<>>\@nil
    }
    \gdef\Hy@vt@PutCatalog#1/PageLabels <<#2>>#3\@nil{%
      \ifx\\#2\\%
      \else
        \immediate\special{!pdfpagelabels #2}%
      \fi
    }
  \fi
\endgroup
```
⟨/vtex⟩

⟨∗pdftex | vtex⟩

\HyPL@StorePageLabel This macro adds the entry #1 to \HyPL@Labels.

```
\ifHy@pagelabels
  \def\HyPL@StorePageLabel#1{%
    \toks@\expandafter{\HyPL@Labels}%
    \xdef\HyPL@Labels{%
      \the\toks@
      \the\Hy@abspage\space<< #1 >> %
    }%
  }
```

At the end of the document, \clearpage tries to make sure, that no further pages will follow. Then the PDF catalog entry for \PageLabels is set.

```
  \AtEndDocument{\clearpage\HyPL@SetPageLabels}
\fi
```
⟨/pdftex | vtex⟩

26.1.2 pdfmarkbase, dvipdfm

\Hy@PutCatalog

```
⟨dvipdfm⟩\def\Hy@PutCatalog#1{\@pdfm@mark{docview << #1 >>}}
⟨∗pdfmarkbase⟩
\def\Hy@PutCatalog#1{%
  \pdfmark{pdfmark=/PUT,Raw={\string{Catalog\string} << #1 >>}}%
}
⟨/pdfmarkbase⟩

⟨∗pdfmarkbase | dvipdfm⟩
\ifHy@pagelabels
```

\HyPL@StorePageLabel This macro writes a string to the .aux file.

```
  \def\HyPL@StorePageLabel#1{%
    \if@filesw
      \begingroup
        \edef\Hy@tempa{\the\Hy@abspage\space<< #1 >> }%
```

```
        \immediate\write\@mainaux{%
          \string\HyPL@Entry{\Hy@tempa}%
        }%
      \endgroup
    \fi
  }
```

Write a dummy definition of `\HyPL@Entry` for the case, that the next run is done without hyperref. A marker for the rerun warning is set and the /PageLabels is written.

```
  \AfterBeginDocument{%
    \if@filesw
      \immediate\write\@mainaux{%
        \string\providecommand\string*\string\HyPL@Entry[1]{}%
      }%
    \fi
    \ifx\HyPL@Labels\@empty
      \Hy@WarningNoLine{Rerun to get /PageLabels entry}%
    \else
      \HyPL@SetPageLabels
    \fi
    \let\HyPL@Entry\@gobble
  }%
```

`\HyPL@Entry`

```
  \def\HyPL@Entry#1{%
    \expandafter\gdef\expandafter\HyPL@Labels\expandafter{%
      \HyPL@Labels
      #1%
    }%
  }

\fi
⟨/pdfmarkbase | dvipdfm⟩

⟨*package⟩

\MaybeStopEarly
```

27 Automated LaTeX hypertext cross-references

Anything which can be referenced advances some counter; we overload this to put in a hypertext starting point (with no visible anchor), and make a note of that for later use in `\label`. This will fail badly if `\theH<name>` does not expand to a sensible reference. This means that classes or package which introduce new elements need to define an equivalent `\theH<name>` for every `\the<name>`. We do make a trap to make `\theH<name>` be the same as `\arabic{<name>}`, if `\theH<name>` is not defined, but this is not necessarily a good idea. Alternatively, the 'naturalnames' option uses whatever LaTeX provides, which may be useable. But then its up to you to make sure these are legal PDF and HTML names. The 'hypertexnames=false' option just makes up arbitrary names.

All the shenanigans is to make sure section numbers etc are always arabic, separated by dots. Who knows how people will set up `\@currentlabel`? If they put spaces in, or brackets (quite legal) then the hypertext processors will get upset.

But this is flaky, and open to abuse. Styles like `subeqn` will mess it up, for starters. Appendices are an issue, too. We just hope to cover most situations. We can at least cope with the standard sectioning structure, allowing for `\part` and `\chapter`.

Start with a fallback for equations

```
\newcommand\theHequation{\theHsection.\arabic{equation}}
\@ifundefined{thepart}{}{\newcommand\theHpart{\arabic{part}}}
\@ifundefined{thechapter}{%
  \newcommand\theHsection    {\arabic{section}}
  \newcommand\theHfigure     {\arabic{figure}}
  \newcommand\theHtable      {\arabic{table}}
}{%
  \newcommand\theHchapter    {\arabic{chapter}}
  \newcommand\theHfigure     {\theHchapter.\arabic{figure}}
  \newcommand\theHtable      {\theHchapter.\arabic{table}}
  \newcommand\theHsection    {\theHchapter.\arabic{section}}
}
\newcommand\theHsubsection   {\theHsection.\arabic{subsection}}
\newcommand\theHsubsubsection{\theHsubsection.\arabic{subsubsection}}
\newcommand\theHparagraph    {\theHsubsubsection.\arabic{paragraph}}
\newcommand\theHsubparagraph {\theHparagraph.\arabic{subparagraph}}
\newcommand\theHtheorem      {\theHsection.\arabic{theorem}}
\newcommand\theHthm          {\theHsection.\arabic{thm}}
```

Thanks to Greta Meyer (gbd@pop.cwru.edu) for making me realize that enumeration starts at 0 for every list! But `\item` occurs inside `\trivlist`, so check if its a real `\item` before incrementing counters.

```
\let\H@item\item
\newcounter{Item}
\def\theHItem{\arabic{Item}}
\def\item{%
  \@hyper@itemfalse
  \if@nmbrlist\@hyper@itemtrue\fi
  \H@item
}
```

```
\newcommand\theHenumi     {\theHItem}
\newcommand\theHenumii    {\theHItem}
\newcommand\theHenumiii   {\theHItem}
\newcommand\theHenumiv    {\theHItem}
\newcommand\theHHfootnote {\arabic{Hfootnote}}
\newcommand\theHmpfootnote{\arabic{mpfootnote}}
\let\theHHmpfootnote\theHHfootnote
```

Tanmoy asked for this default handling of undefined `\theH<name>` situations. It really isn't clear what would be ideal, whether to turn off hyperizing of unknown elements, to pick up the textual definition of the counter, or to default it to something like `\arabic{name}`. We take the latter course, slightly worriedly.

```
\let\H@refstepcounter\refstepcounter
\edef\name@of@eq{equation}%
\edef\name@of@slide{slide}%
```

We do not want the handler for `\refstepcounter` to cut in during the processing of `\item` (we handle that separately), so we provide a bypass conditional.

```
\newif\if@hyper@item
\newif\if@skiphyperref
\@hyper@itemfalse
\@skiphyperreffalse
\def\refstepcounter#1{%
  \H@refstepcounter{#1}%
  \edef\This@name{#1}%
  \ifx\This@name\name@of@slide
  \else
    \if@skiphyperref
```

```
    \else
      \if@hyper@item
        \stepcounter{Item}%
        \hyper@refstepcounter{Item}%
      \else
        \hyper@refstepcounter{#1}%
      \fi
    \fi
  \fi
}
```

AMSLaTeX processes all equations twice; we want to make sure that the hyper stuff is not executed twice, so we use the AMS `\ifmeasuring@`, initialized if AMS math is not used.

```
\@ifpackageloaded{amsmath}{}{\newif\ifmeasuring@\measuring@false}
```

`\hyper@refstepcounter`

```
\def\hyper@refstepcounter#1{%
  \edef\This@name{#1}%
  \ifx\This@name\name@of@eq
    \make@stripped@name{\theequation}%
    \let\theHequation\newname
  \fi
  \@ifundefined{theH#1}{%
    \expandafter\def\csname theH#1\endcsname{\arabic{#1}}%
  }{}%
  \hyper@makecurrent{#1}%
  \ifmeasuring@
  \else
    \Hy@raisedlink{%
      \hyper@anchorstart{\@currentHref}\hyper@anchorend
    }%
  \fi
}
```

After `\appendix` "chapter" (or "section" for classes without chapter) should be replaced by "appendix" to get `\autoref` work. Macro `\Hy@chapapp` contains the current valid name like `\@chapapp`, which cannot be used, because this string depends on the current language.

The "french" package defines counter `\thechapter` by `\newcounterchapter`, if `\@ifundefinedchapter`.

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname chapter\endcsname\relax
  \def\Hy@chapterstring{section}%
\else
  \def\Hy@chapterstring{chapter}%
\fi
\def\Hy@appendixstring{appendix}
\def\Hy@chapapp{\Hy@chapterstring}
\let\HyOrg@appendix\appendix
\def\appendix{%
  \@ifundefined{chapter}%
    {\gdef\theHsection{\Alph{section}}}%
    {\gdef\theHchapter{\Alph{chapter}}}%
  \xdef\Hy@chapapp{\Hy@appendixstring}%
  \HyOrg@appendix
}
```

\hyper@makecurrent Because of Babel mucking around, nullify \textlatin when making names. And \@number because of babel's lrbabel.def.

```
\def\hyper@makecurrent#1{%
  \begingroup
    \edef\Hy@param{#1}%
    \ifx\Hy@param\Hy@chapterstring
      \let\Hy@param\Hy@chapapp
    \fi
    \ifHy@hypertexnames
      \let\@number\@firstofone
      \ifHy@naturalnames
        \let\textlatin\@firstofone
        \xdef\@currentHlabel{\csname the#1\endcsname}%
      \else
        \xdef\@currentHlabel{\csname theH#1\endcsname}%
      \fi
      \xdef\@currentHref{%
        \Hy@param.\expandafter\strip@prefix\meaning\@currentHlabel
      }%
    \else
      \Hy@GlobalStepCount\Hy@linkcounter
      \xdef\@currentHref{\Hy@param.\the\Hy@linkcounter}%
    \fi
  \endgroup
}

\@ifpackageloaded{fancyvrb}{%
  \def\FV@StepLineNo{%
    \FV@SetLineNo
    \def\FV@StepLineNo{\H@refstepcounter{FancyVerbLine}}%
    \FV@StepLineNo
  }%
}{}
```

28 Package lastpage support

Package lastpage directly writes the \newlabel command to the aux file. Because package hyperref requires additional arguments, the internal command \lastpage@putlabel is redefined. The patch is deferred by \AtBeginDocument, because it is possible that package lastpage is loaded after package hyperref. The same algorithm (options hypertexnames and plainpages) is used to get the page anchor name as in \@hyperfixhead (see sec. 37). The link will not work if option pageanchor is set to false.

\lastpage@putlabel

```
\AtBeginDocument{%
  \@ifpackageloaded{lastpage}{%
    \ifHy@pageanchor
    \else
      \Hy@WarningNoLine{%
        The \string\pageref{LastPage} link doesn't work\MessageBreak
        with disabled option 'pageanchor'%
      }%
    \fi
    \def\lastpage@putlabel{%
      \addtocounter{page}{-1}%
      \if@filesw
```

```
        \begingroup
          \let\@number\@firstofone
          \ifHy@pageanchor
            \ifHy@hypertexnames
              \ifHy@plainpages
                \def\Hy@temp{\arabic{page}}%
              \else
                \Hy@unicodefalse
                \pdfstringdef\Hy@temp{\thepage}%
              \fi
            \else
              \def\Hy@temp{\the\Hy@pagecounter}%
            \fi
          \fi
          \immediate\write\@auxout{%
            \string\newlabel
              {LastPage}{{}{\thepage}{}{%
                \ifHy@pageanchor page.\Hy@temp\fi}{}}%
          }%
        \endgroup
      \fi
      \addtocounter{page}{1}%
    }%
  }{}%
}
⟨/package⟩
⟨*check⟩
\checkpackage{lastpage}[1994/06/25]
\checkcommand\def\lastpage@putlabel{%
  \addtocounter{page}{-1}%
  \immediate\write\@auxout{%
    \string\newlabel{LastPage}{{}{\thepage}}%
  }%
  \addtocounter{page}{1}%
}
⟨/check⟩
⟨*package⟩
```

29 Package ifthen support

Since version 6.75a this is done in package nameref.

For compatibility `\hypergetref` and `\hypergetpageref` are still provided. But they do not generate warnings, if the reference is undefined.

```
\def\hypergetref#1{\getrefbykeydefault{#1}{}{??}}
\def\hypergetpageref#1{\getrefbykeydefault{#1}{page}{0}}
```

30 Package titlesec and titletoc support

This code is contributed by Javier Bezos (Email: `jbezos@arrakis.es`).

Package titlesec support:

```
\@ifpackageloaded{titlesec}{%
  \def\ttl@Hy@steplink#1{%
    \Hy@GlobalStepCount\Hy@linkcounter
    \xdef\@currentHref{#1*.\the\Hy@linkcounter}%
```

```
    \def\ttl@Hy@saveanchor{%
      \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
    }%
  }%
  \def\ttl@Hy@refstepcounter#1{%
    \let\ttl@b\Hy@raisedlink
    \def\Hy@raisedlink##1{\def\ttl@Hy@saveanchor{\Hy@raisedlink{##1}}}%
    \refstepcounter{#1}%
    \let\Hy@raisedlink\ttl@b
  }%
}{}
```

Package titletoc support:

```
\@ifpackageloaded{titletoc}{%
  \def\ttl@gobblecontents#1#2#3#4{\ignorespaces}%
}{}
```

31 Package varioref support

Package nameref uses five arguments for the ref system. Fix provided by Felix Neubauer (`felix.neubauer@gmx.net`).

```
\def\Hy@varioref@undefined{{???}{??}{}{}{}}
\@ifpackageloaded{varioref}{%
  \def\vref@pagenum#1#2{%
    \@ifundefined{r@#2}{%
      \expandafter\let\csname r@#2\endcsname\Hy@varioref@undefined
    }{}%
    \edef#1{\getpagerefnumber{#2}}%
  }%
}{}
```

32 Package longtable support

Sometimes the anchor of the longtable goes to the previous page. Thus the following patch separates the anchor setting and counter incrementation by hyperref's `\refstepcounter` and the anchor setting is moved after `\vskip\LTpre`.

Patch of `\LT@array`: replace `\refstepcounter` by the original `\H@refstepcounter` without anchor generation

```
\@ifpackageloaded{longtable}{%
  \begingroup
    \def\y{\LT@array}%
    \@ifundefined{scr@LT@array}{}{\def\y{\scr@LT@array}}%
    \long\def\x\refstepcounter#1#2\@sharp#3#4\@nil{%
      \expandafter\endgroup
      \expandafter\def\y[##1]##2{%
        \H@refstepcounter{#1}%
        \hyper@makecurrent{table}%
        #2\@sharp#####4%
      }%
    }%
  \expandafter\expandafter\expandafter\x\y[#1]{#2}\@nil
```

Patch of `\LT@start`: add anchor before first line after `\vskip\LTpre`

```
  \begingroup
    \def\x#1\ifvoid\LT@firsthead\copy#2\@nil{%
```

```
      \endgroup
      \def\LT@start{%
        #1%
        \hyper@refstepcounter{table}%
        \ifvoid\LT@firsthead\copy
        #2%
      }%
    }%
  \expandafter\x\LT@start\@nil
}{}
```

33 Equations

We want to make the whole equation a target anchor. Overload equation, temporarily reverting to original `\refstepcounter`. If, however, it is in AMS math, we do not do anything, as the tag mechanism is used there (see section 40). The execption is that we move the equation incrementation inside the math environment to avoid specials outside and a wrong vertical spacing of equation environments.

```
\let\new@refstepcounter\refstepcounter
\let\H@equation\equation
\let\H@endequation\endequation

\@ifpackageloaded{amsmath}{%
  \long\def\Hy@temp{%
    \incr@eqnum
    \mathdisplay@push
    \st@rredfalse \global\@eqnswtrue
    \mathdisplay{equation}%
  }%
  \ifx\Hy@temp\equation
    \expandafter\ifx\csname if@fleqn\expandafter\endcsname
                    \csname iftrue\endcsname
    \else
      \long\def\equation{%
        \mathdisplay@push
        \st@rredfalse \global\@eqnswtrue
        \mathdisplay{equation}%
        \incr@eqnum
      }%
    \fi
  \fi
}{%
  \def\equation{%
    \let\refstepcounter\H@refstepcounter
    \H@equation
    \make@stripped@name{\theequation}%
    \let\theHequation\newname
    \hyper@makecurrent{equation}%
    \Hy@raisedlink{\hyper@anchorstart{\@currentHref}}%
    \let\refstepcounter\new@refstepcounter
  }%
  \def\endequation{\Hy@raisedlink{\hyper@anchorend}\H@endequation}%
}
```

My goodness, why can't LaTeX be consistent? Why is `\eqnarray` set up differently from other objects?

People (you know who you are, Thomas Beuth) sometimes make an eqnarray where *all* the lines end with `\notag`, so there is no suitable anchor at all. In this case, pass by on the other side.

```
\newif\if@eqnstar
\@eqnstarfalse
\let\H@eqnarray\eqnarray
\let\H@endeqnarray\endeqnarray
\def\eqnarray{%
  \let\Hy@reserved@a\relax
  \def\@currentHref{}%
  \H@eqnarray
  \if@eqnstar
  \else
    \ifx\\\@currentHref\\%
    \else
      \make@stripped@name{\theequation}%
      \let\theHequation\newname
      \hyper@makecurrent{equation}%
      \hyper@anchorstart{\@currentHref}{}\hyper@anchorend
    \fi
  \fi
}
\def\endeqnarray{%
  \H@endeqnarray
}
```

This is quite heavy-handed, but it works for now. If its an `eqnarray*` we need to disable the hyperref actions. There may well be a cleaner way to trap this. Bill Moss found this.

```
\@namedef{eqnarray*}{%
  \def\@eqncr{\nonumber\@seqncr}\@eqnstartrue\eqnarray
}
\@namedef{endeqnarray*}{%
  \nonumber\endeqnarray\@eqnstarfalse
}
```

Then again, we have the *subeqnarray* package. Tanmoy provided some code for this:

```
\@ifundefined{subeqnarray}{}{%
  \let\H@subeqnarray\subeqnarray
  \let\H@endsubeqnarray\endsubeqnarray
  \def\subeqnarray{%
    \let\Hy@reserved@a\relax
    \H@subeqnarray
    \make@stripped@name{\theequation}%
    \let\theHequation\newname
    \hyper@makecurrent{equation}%
    \hyper@anchorstart{\@currentHref}{}\hyper@anchorend
  }%
  \def\endsubeqnarray{%
    \H@endsubeqnarray
  }%
  \newcommand\theHsubequation{\theHequation\alph{subequation}}%
}
```

The aim of this macro is to produce a sanitized version of its argument, to make it a safe label.

```
\def\make@stripped@name#1{%
  \begingroup
    \escapechar\m@ne
```

```
    \global\let\newname\@empty
    \protected@edef\Hy@tempa{#1}%
    \edef\@tempb{%
      \noexpand\@tfor\noexpand\Hy@tempa:=%
        \expandafter\strip@prefix\meaning\Hy@tempa
    }%
    \@tempb\do{%
      \if{\Hy@tempa\else
        \if}\Hy@tempa\else
          \xdef\newname{\newname\Hy@tempa}%
        \fi
      \fi
    }%
  \endgroup
}
```

34 Footnotes

The footnote mark is a hypertext link, and the text is a target. We separately number the footnotes sequentially through the text, separately from whatever labels the text assigns. Too hard to keep track of markers otherwise. If the raw forms `\footnotemark` and `\footnotetext` are used, force them to use un-hyper original.

Tabularx causes footnote problems, disable the linking if that is loaded.

```
\@ifpackageloaded{tabularx}{\Hy@hyperfootnotesfalse}{}
\ifHy@hyperfootnotes
  \newcounter{Hfootnote}
  \let\H@@footnotetext\@footnotetext
  \let\H@@footnotemark\@footnotemark
  \def\@xfootnotenext[#1]{%
    \begingroup
      \csname c@\@mpfn\endcsname #1\relax
      \unrestored@protected@xdef\@thefnmark{\thempfn}%
    \endgroup
    \ifx\@footnotetext\@mpfootnotetext
      \expandafter\H@@mpfootnotetext
    \else
      \expandafter\H@@footnotetext
    \fi
  }%
  \def\@xfootnotemark[#1]{%
    \begingroup
      \c@footnote #1\relax
      \unrestored@protected@xdef\@thefnmark{\thefootnote}%
    \endgroup
    \H@@footnotemark
  }%
  \let\H@@mpfootnotetext\@mpfootnotetext
  \long\def\@mpfootnotetext#1{%
    \H@@mpfootnotetext{%
      \ifHy@nesting
        \hyper@@anchor{\Hy@footnote@currentHref}{#1}%
      \else
        \Hy@raisedlink{%
          \hyper@@anchor{\Hy@footnote@currentHref}{\relax}%
        }#1%
      \fi
```

```
  }%
}%
\long\def\@footnotetext#1{%
  \H@@footnotetext{%
    \ifHy@nesting
      \hyper@@anchor{\Hy@footnote@currentHref}{#1}%
    \else
      \Hy@raisedlink{%
        \hyper@@anchor{\Hy@footnote@currentHref}{\relax}%
      }%
      \let\@currentHlabel\Hy@footnote@currentHlabel
      \let\@currentHref\Hy@footnote@currentHref
      \let\@currentlabelname\@empty
      #1%
    \fi
  }%
}%
```

Redefine `\@footnotemark`, borrowing its code (at the cost of getting out of sync with latex.ltx), to take advantage of its white space and hyphenation fudges. If we just overload it, we can get variant documents (the word before the footnote is treated differently). Thanks to David Carlisle and Brian Ripley for confusing and helping me on this.

```
\def\@footnotemark{%
  \leavevmode
  \ifhmode\edef\@x@sf{\the\spacefactor}\nobreak\fi
  \stepcounter{Hfootnote}%
  \global\let\Hy@saved@currentHlabel\@currentHlabel
  \global\let\Hy@saved@currentHref\@currentHref
  \hyper@makecurrent{Hfootnote}%
  \global\let\Hy@footnote@currentHlabel\@currentHlabel
  \global\let\Hy@footnote@currentHref\@currentHref
  \global\let\@currentHlabel\Hy@saved@currentHlabel
  \global\let\@currentHref\Hy@saved@currentHref
  \hyper@linkstart{link}{\Hy@footnote@currentHref}%
  \@makefnmark
  \hyper@linkend
  \ifhmode\spacefactor\@x@sf\fi
  \relax
}%
```

Support for footnotes in p columns of longtable. Here `\footnote` commands are splitted into `\footnotemark` and a call of `\footnotetext` with the optional argument, that is not supported by hyperref. The result is a link by `\footnotemark` without valid anchor.

```
\@ifpackageloaded{longtable}{%
  \CheckCommand*{\LT@p@ftntext}[1]{%
    \edef\@tempa{%
      \the\LT@p@ftn
      \noexpand\footnotetext[\the\c@footnote]%
    }%
    \global\LT@p@ftn\expandafter{\@tempa{#1}}%
  }%
  \long\def\LT@p@ftntext#1{%
    \edef\@tempa{%
      \the\LT@p@ftn
      \begingroup
        \noexpand\c@footnote=\the\c@footnote\relax
        \noexpand\protected@xdef
```

```
              \noexpand\@thefnmark{\noexpand\thempfn}%
          \noexpand\protected@xdef\noexpand\@thefnmark{%
            \noexpand\thempfn
          }%
          \expandafter\expandafter\expandafter\noexpand
          \expandafter\expandafter\expandafter\Hy@LT@footnotetext
          \expandafter\expandafter\expandafter{%
            \expandafter\Hy@footnote@currentHref\expandafter
          }\expandafter{\Hy@footnote@currentHlabel}%
      }%
      \global\LT@p@ftn\expandafter{%
          \@tempa{#1}%
        \endgroup
      }%
    }%
    \long\def\Hy@LT@footnotetext#1#2#3{%
      \H@@footnotetext{%
        \ifHy@nesting
          \hyper@@anchor{#1}{#3}%
        \else
          \Hy@raisedlink{%
            \hyper@@anchor{#1}{\relax}%
          }%
          \def\@currentHlabel{#2}%
          \def\@currentHref{#1}%
          \let\@currentlabelname\@empty
          #3%
        \fi
      }%
    }%
  }{}%
```

But the special footnotes in `\maketitle` are much too hard to deal with properly. Let them revert to plain behaviour. The koma classes add an optional argument.

```
  \let\HyOrg@maketitle\maketitle
  \def\maketitle{%
    \let\Hy@saved@footnotemark\@footnotemark
    \let\Hy@saved@footnotetext\@footnotetext
    \let\@footnotemark\H@@footnotemark
    \let\@footnotetext\H@@footnotetext
    \@ifnextchar[\Hy@maketitle@optarg{% ]
      \HyOrg@maketitle
      \Hy@maketitle@end
    }%
  }%
  \def\Hy@maketitle@optarg[#1]{%
    \HyOrg@maketitle[{#1}]%
    \Hy@maketitle@end
  }%
  \def\Hy@maketitle@end{%
    \ifx\@footnotemark\H@@footnotemark
      \let\@footnotemark\Hy@saved@footnotemark
    \fi
    \ifx\@footnotetext\H@@footnotetext
      \let\@footnotetext\Hy@saved@footnotetext
    \fi
  }%
```

\realfootnote Does anyone remember the function and purpose of \realfootnote?

```
  \def\realfootnote{%
    \@ifnextchar[\@xfootnote{%
      \stepcounter{\@mpfn}%
      \protected@xdef\@thefnmark{\thempfn}%
      \H@@footnotemark\H@@footnotetext
    }%
  }%
\fi
\Hy@DisableOption{hyperfootnotes}

⟨/package⟩
⟨*check⟩
\checklatex
\checkcommand\def\@xfootnotenext[#1]{%
  \begingroup
    \csname c@\@mpfn\endcsname #1\relax
    \unrestored@protected@xdef\@thefnmark{\thempfn}%
  \endgroup
  \@footnotetext
}
\checkcommand\def\@xfootnotemark[#1]{%
  \begingroup
    \c@footnote #1\relax
    \unrestored@protected@xdef\@thefnmark{\thefootnote}%
  \endgroup
  \@footnotemark
}
\checkcommand\def\@footnotemark{%
  \leavevmode
  \ifhmode\edef\@x@sf{\the\spacefactor}\nobreak\fi
  \@makefnmark
  \ifhmode\spacefactor\@x@sf\fi
  \relax
}
⟨/check⟩
⟨*package⟩
```

35 Float captions

Make the float caption the hypertext anchor; curiously enough, we can't just copy the definition of \@caption. Its all to do with expansion. It screws up. Sigh.

```
\def\caption{%
  \ifx\@captype\@undefined
    \@latex@error{\noexpand\caption outside float}\@ehd
    \expandafter\@gobble
  \else
    \H@refstepcounter\@captype
    \@ifundefined{fst@\@captype}{%
      \let\Hy@tempa\@caption
    }{%
      \let\Hy@tempa\Hy@float@caption
    }%
    \expandafter\@firstofone
  \fi
```

```
  {\@dblarg{\Hy@tempa\@captype}}%
}
\long\def\@caption#1[#2]#3{%
  \hyper@makecurrent{\@captype}%
  \def\@currentlabelname{#2}%
  \par\addcontentsline{\csname ext@#1\endcsname}{#1}{%
    \protect\numberline{\csname the#1\endcsname}{\ignorespaces #2}%
  }%
  \begingroup
    \@parboxrestore
    \if@minipage
      \@setminipage
    \fi
    \normalsize
    \@makecaption{\csname fnum@#1\endcsname}{%
      \ignorespaces
```

If we cannot have nesting, the anchor is empty.

```
      \ifHy@nesting
        \hyper@@anchor{\@currentHref}{#3}%
      \else
        \Hy@raisedlink{\hyper@@anchor{\@currentHref}{\relax}}#3%
      \fi
    }%
    \par
  \endgroup
}
```

Compatibility with float.sty: anchor setting at the top of the float, if the float is controlled by float.sty. Several `\caption` commands inside one float are not supported.

```
\let\Hy@float@caption\@caption
\@ifpackageloaded{float}{%
  \def\Hy@float@caption{%
    \hyper@makecurrent{\@captype}%
    \float@caption
  }
  \let\HyOrg@float@makebox\float@makebox
  \renewcommand{\float@makebox}[1]{%
    \HyOrg@float@makebox{%
      #1\relax
      \begingroup
        \hyper@makecurrent{\@captype}%
        \hyper@@anchor{\@currentHref}{\relax}%
      \endgroup
    }%
  }%
}{}
```

```
⟨/package⟩
⟨*check⟩
\checklatex[1999/06/01 - 2000/06/01]
\checkcommand\def\caption{%
  \ifx\@captype\@undefined
    \@latex@error{\noexpand\caption outside float}\@ehd
    \expandafter\@gobble
  \else
    \refstepcounter\@captype
    \expandafter\@firstofone
  \fi
```

```
  {\@dblarg{\@caption\@captype}}%
}
\checkcommand\long\def\@caption#1[#2]#3{%
  \par
  \addcontentsline{\csname ext@#1\endcsname}{#1}%
    {\protect\numberline{\csname the#1\endcsname}{\ignorespaces #2}}%
  \begingroup
    \@parboxrestore
    \if@minipage
      \@setminipage
    \fi
    \normalsize
    \@makecaption{\csname fnum@#1\endcsname}{\ignorespaces #3}\par
  \endgroup
}
⟨/check⟩
⟨∗package⟩
```

36 Bibliographic references

This is not very robust, since many styles redefine these things. The package used to redefine `\@citex` and the like; then we tried adding the hyperref call explicitly into the .aux file. Now we redefine `\bibcite`; this still breaks some citation packages so we have to work around them. But this remains extremely dangerous. Any or all of *achemso*, *chapterbib*, and *drftcite* may break.

However, lets make an attempt to get *natbib* right, because thats a powerful, important package. Patrick Daly (`daly@linmpi.mpg.de`) has provided hooks for us, so all we need to do is activate them.

```
\def\hyper@natlinkstart#1{%
  \Hy@backout{#1}%
  \hyper@linkstart{cite}{cite.#1}%
  \def\hyper@nat@current{#1}%
}
\def\hyper@natlinkend{%
  \hyper@linkend
}
\def\hyper@natlinkbreak#1#2{%
  \hyper@linkend#1\hyper@linkstart{cite}{cite.#2}%
}
\def\hyper@natanchorstart#1{%
  \Hy@raisedlink{\hyper@anchorstart{cite.#1}}%
}
\def\hyper@natanchorend{\hyper@anchorend}
```

Do not play games if we have natbib support. Macro extra@binfo added for chapterbib support.

```
\@ifundefined{NAT@parse}{%
  \def\bibcite#1#2{%
    \@newl@bel{b}{#1\@extra@binfo}{\hyper@@link[cite]{}{cite.#1}{#2}}%
  }%
  \gdef\@extra@binfo{}%
```

Package `babel` redefines `\bibcite` with macro `\bbl@cite@choice`. It needs to be overwritten to avoid the warning "Label(s) may have changed.".

```
  \let\Hy@bibcite\bibcite
  \begingroup
```

```
    \@ifundefined{bbl@cite@choice}{}{%
      \g@addto@macro\bbl@cite@choice{%
        \let\bibcite\Hy@bibcite
      }%
    }%
  \endgroup
```

\@BIBLABEL is working around a 'feature' of RevTEX.

```
  \providecommand*{\@BIBLABEL}{\@biblabel}%
  \def\@lbibitem[#1]#2{%
    \@skiphyperreftrue
    \H@item[%
      \ifx\Hy@raisedlink\@empty
        \hyper@anchorstart{cite.#2}\@BIBLABEL{#1}\hyper@anchorend
      \else
        \Hy@raisedlink{\hyper@anchorstart{cite.#2}\hyper@anchorend}%
        \@BIBLABEL{#1}%
      \fi
      \hfill
    ]%
    \@skiphyperreffalse
    \if@filesw
      \begingroup
        \let\protect\noexpand
        \immediate\write\@auxout{%
          \string\bibcite{#2}{#1}%
        }%
      \endgroup
    \fi
    \ignorespaces
  }%
```

Since \bibitem is doing its own labelling, call the raw version of \item, to avoid extra spurious labels

```
  \def\@bibitem#1{%
    \@skiphyperreftrue\H@item\@skiphyperreffalse
    \Hy@raisedlink{\hyper@anchorstart{cite.#1}\relax\hyper@anchorend}%
    \if@filesw
      \begingroup
        \let\protect\noexpand
        \immediate\write\@auxout{%
          \string\bibcite{#1}{\the\value{\@listctr}}%
        }%
      \endgroup
    \fi
    \ignorespaces
  }%
}{}
```

```
⟨/package⟩
⟨*check⟩
\checklatex
\checkcommand\def\@lbibitem[#1]#2{%
  \item[\@biblabel{#1}\hfill]%
  \if@filesw
    {%
      \let\protect\noexpand
      \immediate\write\@auxout{%
        \string\bibcite{#2}{#1}%
```

```
      }%
    }%
  \fi
  \ignorespaces
}
\checkcommand\def\@bibitem#1{%
  \item
  \if@filesw
    \immediate\write\@auxout{%
      \string\bibcite{#1}{\the\value{\@listctr}}%
    }%
  \fi
  \ignorespaces
}
⟨/check⟩
⟨∗package⟩
```

Revtex (bless its little heart) takes over `\bibcite` and looks at the result to measure something. Make this a hypertext link and it goes ape. Therefore, make an anodyne result first, call its business, then go back to the real thing.

```
\@ifclassloaded{revtex}{%
  \Hy@Info{*** compatibility with revtex **** }%
  \def\revtex@checking#1#2{%
    \expandafter\let\expandafter\T@temp\csname b@#1\endcsname
    \expandafter\def\csname b@#1\endcsname{#2}%
    \@SetMaxRnhefLabel{#1}%
    \expandafter\let\csname b@#1\endcsname\T@temp
  }%
```

Tanmoy provided this replacement for CITEX. Lord knows what it does. For chapterbib added: extra@b@citeb

```
  \@ifundefined{@CITE}{\def\@CITE{\@cite}}{}%
  \providecommand*{\@extra@b@citeb}{}%
  \def\@CITEX[#1]#2{%
    \let\@citea\@empty
    \leavevmode
    \unskip
    $^{%
      \scriptstyle
      \@CITE{%
        \@for\@citeb:=#2\do{%
          \@citea
          \def\@citea{,\penalty\@m\ }%
          \edef\@citeb{\expandafter\@firstofone\@citeb}%
          \if@filesw
            \immediate\write\@auxout{\string\citation{\@citeb}}%
          \fi
          \@ifundefined{b@\@citeb\extra@b@citeb}{%
            \mbox{\reset@font\bfseries ?}%
            \G@refundefinedtrue
            \@latex@warning{%
              Citation `\@citeb' on page \thepage \space undefined%
            }%
          }{%
            {\csname b@\@citeb\@extra@b@citeb\endcsname}%
          }%
        }%
      }{#1}%
```

```
    }$%
  }%
```

No, life is too short. I am not going to understand the Revtex `\@collapse` macro, I shall just restore the original behaviour of `\@citex`; sigh. This is SO vile.

```
  \def\@citex[#1]#2{%
    \let\@citea\@empty
    \@cite{%
      \@for\@citeb:=#2\do{%
        \@citea
        \def\@citea{,\penalty\@m\ }%
        \edef\@citeb{\expandafter\@firstofone\@citeb}%
        \if@filesw
          \immediate\write\@auxout{\string\citation{\@citeb}}%
        \fi
        \@ifundefined{b@\@citeb\@extra@b@citeb}{%
          \mbox{\reset@font\bfseries ?}%
          \G@refundefinedtrue
          \@latex@warning{%
            Citation `\@citeb' on page \thepage \space undefined%
          }%
        }{%
          \hbox{\csname b@\@citeb\@extra@b@citeb\endcsname}%
        }%
      }%
    }{#1}%
  }%
}{}
```

36.1 Package harvard

Override Peter Williams' Harvard package; we have to a) make each of the citation types into a link; b) make each citation write a backref entry, and c) kick off a backreference section for each bibliography entry.

The redefinitions have to be deferred to `\begin{document}`, because if harvard.sty is loaded and html.sty is present and detects pdfTeX, then hyperref is already loaded at the begin of harvard.sty, and the `\newcommand` macros causes error messages.

```
\@ifpackageloaded{harvard}{%
  \AtBeginDocument{%
    \Hy@Info{*** compatibility with harvard **** }%
    \Hy@raiselinksfalse
    \def\harvardcite#1#2#3#4{%
      \global\@namedef{HAR@fn@#1}{\hyper@@link[cite]{}{cite.#1}{#2}}%
      \global\@namedef{HAR@an@#1}{\hyper@@link[cite]{}{cite.#1}{#3}}%
      \global\@namedef{HAR@yr@#1}{\hyper@@link[cite]{}{cite.#1}{#4}}%
      \global\@namedef{HAR@df@#1}{\csname HAR@fn@#1\endcsname}%
    }%
    \def\HAR@citetoaux#1{%
      \if@filesw\immediate\write\@auxout{\string\citation{#1}}\fi%
      \ifHy@backref
        \ifx\@empty\@currentlabel
        \else
          \@bsphack
          \if@filesw
            \protected@write\@auxout{}{%
              \string\@writefile{brf}{%
                \string\backcite{#1}{%
```

```
                {\thepage}{\@currentlabel}{\@currentHref}%
              }%
            }%
          }%
        \fi
        \@esphack
      \fi
    \fi
  }%
  \def\harvarditem{%
    \@ifnextchar[{\@harvarditem}{\@harvarditem[\null]}%
  }%
  \def\@harvarditem[#1]#2#3#4#5\par{%
    \item[]%
    \hyper@anchorstart{cite.#4}\relax\hyper@anchorend
    \if@filesw
      \begingroup
        \def\protect##1{\string ##1\space}%
        \ifthenelse{\equal{#1}{\null}}%
          {\def\next{{#4}{#2}{#2}{#3}}}%
          {\def\next{{#4}{#2}{#1}{#3}}}%
        \immediate\write\@auxout{\string\harvardcite\codeof\next}%
      \endgroup
    \fi
    \protect\hspace*{-\labelwidth}%
    \protect\hspace*{-\labelsep}%
    \ignorespaces
    #5%
    \ifHy@backref
      \newblock
      \backref{\csname br@#4\endcsname}%
    \fi
    \par
  }%
```

`\HAR@checkcitations` Package hyperref has added `\hyper@@link`, so the original test `\HAR@checkcitations` will fail every time and always will appear the "Changed labels" warning. So we have to redefine `\Har@checkcitations`:

```
  \long\def\HAR@checkcitations#1#2#3#4{%
    \def\HAR@tempa{\hyper@@link[cite]{}{cite.#1}{#2}}%
    \expandafter\ifx\csname HAR@fn@#1\endcsname\HAR@tempa
      \def\HAR@tempa{\hyper@@link[cite]{}{cite.#1}{#3}}%
      \expandafter\ifx\csname HAR@an@#1\endcsname\HAR@tempa
        \def\HAR@tempa{\hyper@@link[cite]{}{cite.#1}{#4}}%
        \expandafter\ifx\csname HAR@yr@#1\endcsname\HAR@tempa
        \else
          \@tempswatrue
        \fi
      \else
        \@tempswatrue
      \fi
    \else
      \@tempswatrue
    \fi
  }%
}%
}{}
```

36.2 Package chicago

The links by \citeN and \shortciteN should include the closing parentheses.

```
\@ifpackageloaded{chicago}{%
```

\citeN

```
  \def\citeN{%
    \def\@citeseppen{-1000}%
    \def\@cite##1##2{##1}%
    \def\citeauthoryear##1##2##3{##1 (##3\@cite@opt)}%
    \@citedata@opt
  }%
```

\shortciteN

```
  \def\shortciteN{%
    \def\@citeseppen{-1000}%
    \def\@cite##1##2{##1}%
    \def\citeauthoryear##1##2##3{##2 (##3\@cite@opt)}%
    \@citedata@opt
  }%
```

\@citedata@opt

```
  \def\@citedata@opt{%
    \let\@cite@opt\@empty
    \@ifnextchar [{%
      \@tempswatrue
      \@citedatax@opt
    }{%
      \@tempswafalse
      \@citedatax[]%
    }%
  }%
```

\@citedatax@opt

```
  \def\@citedatax@opt[#1]{%
    \def\@cite@opt{, #1}%
    \@citedatax[{#1}]%
  }

}{}
```

37 Page numbers

Give every page an automatic number anchor. This involves, sigh, overloading LaTeX's output bits and pieces, which must be dangerous. This used to be \@shipoutsetup, now \@begindvi. We cannot even overload this, as it sets itself to null. SIGH.

```
\def\@begindvi{%
  \unvbox \@begindvibox
  \Hy@begindvi
  \global\let\@begindvi\Hy@begindvi
}
\def\Hy@begindvi{%
  \@hyperfixhead
  \HyPL@EveryPage
}
```

```
\def\pagenumbering#1{%
  \global\c@page \@ne
  \gdef\thepage{\csname @#1\endcsname\c@page}%
}
```

This is needed for some unremembered reason...

```
\let\HYPERPAGEANCHOR\hyperpageanchor
```

Macro `\@hyperfixhead` calls `\hyper@pagetransition` and `\hyper@pageduration`. Therefore empty definitions are provided for drivers that do not define these macros.

The last page should not contain a /Dur key, because there is no page after the last page. Therefore at the last page there should be a command `\hypersetup{pdfpageduration={}}`. This can be set with `\AtEndDocument`, but it can be too late, if the last page is already finished, or too early, if lots of float pages will follow. Therefore currently nothing is done by hyperref.

```
\providecommand*\hyper@pagetransition{}
\providecommand*\hyper@pageduration{}
\providecommand*\hyper@pagehidden{}
```

This where we supply a destination for each page. Test to see if there is some sort of header. The test used to be `\expandafter\ifx\expandafter\@empty\H@old@thehead`.

`\@hyperfixhead`

```
\def\@hyperfixhead{%
  \Hy@DistillerDestFix
  \ifHy@pageanchor
    \ifHy@hypertexnames
      \ifHy@plainpages
        \gdef\Hy@TempPageAnchor{\hyper@@anchor{page.\the\c@page}}%
      \else
        \begingroup
          \let\@number\@firstofone
          \Hy@unicodefalse
          \pdfstringdef\@the@H@page{\thepage}%
        \endgroup
        \gdef\Hy@TempPageAnchor{\hyper@@anchor{page.\@the@H@page}}%
      \fi
    \else
      \Hy@GlobalStepCount\Hy@pagecounter
      \gdef\Hy@TempPageAnchor{\hyper@@anchor{page.\the\Hy@pagecounter}}%
    \fi
  \else
    \let\Hy@TempPageAnchor\@empty
  \fi
  \let\H@old@thehead\@thehead
  \if^\@thehead^%
    \def\H@old@thehead{\hfil}%
  \fi
  \ifHy@texht
    \def\@thehead{}%
  \else
    \ifHy@seminarslides
      \begingroup
        \let\leavevmode\relax
        \Hy@TempPageAnchor\relax
        \hyper@pagetransition
        \hyper@pageduration
        \hyper@pagehidden
```

```
      \endgroup
    \else
      \def\@thehead{%
        \Hy@TempPageAnchor\relax
        \hyper@pagetransition
        \hyper@pageduration
        \hyper@pagehidden
        \H@old@thehead
      }%
    \fi
  \fi
  \ifx\PDF@FinishDoc\@empty
  \else
    \PDF@FinishDoc
    \gdef\PDF@FinishDoc{}%
  \fi
}
```

38 Table of contents

TV Raman noticed that people who add arbitrary material into the TOC generate a bad or null link. We avoid that by checking if the current destination is empty. But if 'the most recent destination' is not what you expect, you will be in trouble.

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname chapter\endcsname\relax
  \def\toclevel@part{0}
\else
  \def\toclevel@part{-1}
\fi
\def\toclevel@chapter{0}
\def\toclevel@section{1}
\def\toclevel@subsection{2}
\def\toclevel@subsubsection{3}
\def\toclevel@paragraph{4}
\def\toclevel@subparagraph{5}
\def\toclevel@figure{0}
\def\toclevel@table{0}
\@ifpackageloaded{listings}{%
  \providecommand*\theHlstlisting{\thelstlisting}%
  \providecommand*\toclevel@lstlisting{0}%
}{}
\@ifpackageloaded{listing}{%
  \providecommand*\theHlisting{\thelisting}%
  \providecommand*\toclevel@listing{0}%
}{}
\def\addcontentsline#1#2#3{% toc extension, type, tag
  \begingroup
    \let\label\@gobble
    \let\textlatin\@firstofone
    \ifx\@currentHref\@empty
      \Hy@Warning{%
        No destination for bookmark of \string\addcontentsline,%
        \MessageBreak destination is added%
      }%
      \phantomsection
    \fi
```

```
    \expandafter\ifx\csname toclevel@#2\endcsname\relax
      \begingroup
        \def\Hy@tempa{#1}%
        \ifx\Hy@tempa\Hy@bookmarkstype
          \Hy@WarningNoLine{bookmark level for unknown #2 defaults to 0}%
        \else
          \Hy@Info{bookmark level for unknown #2 defaults to 0}%
        \fi
      \endgroup
      \expandafter\gdef\csname toclevel@#2\endcsname{0}%
    \fi
    \edef\Hy@toclevel{\csname toclevel@#2\endcsname}%
    \Hy@writebookmark{\csname the#2\endcsname}%
      {#3}%
      {\@currentHref}%
      {\Hy@toclevel}%
      {#1}%
    \ifHy@verbose
      \def\Hy@tempa{#3}%
      \@onelevel@sanitize\Hy@tempa
      \typeout{pdftex: bookmark at \the\inputlineno:
        {\csname the#2\endcsname}
        {\Hy@tempa}
        {\@currentHref}%
        {\Hy@toclevel}%
        {#1}%
      }%
    \fi
    \addtocontents{#1}{%
      \protect\contentsline{#2}{#3}{\thepage}{\@currentHref}%
    }%
  \endgroup
}
\def\contentsline#1#2#3#4{%
  \ifx\\#4\\%
    \csname l@#1\endcsname{#2}{#3}%
  \else
    \ifHy@linktocpage
      \csname l@#1\endcsname{{#2}}{%
        \hyper@linkstart{link}{#4}{#3}\hyper@linkend
      }%
    \else
      \csname l@#1\endcsname{%
        \hyper@linkstart{link}{#4}{#2}\hyper@linkend
      }{#3}%
    \fi
  \fi
}
⟨/package⟩
⟨*check⟩
\checklatex
\checkcommand\def\addcontentsline#1#2#3{%
  \addtocontents{#1}{\protect\contentsline{#2}{#3}{\thepage}}%
}
\checkcommand\def\contentsline#1{\csname l@#1\endcsname}
⟨/check⟩
⟨*package⟩
```

39 New counters

The whole theorem business makes up new counters on the fly; we are going to intercept this. Sigh. Do it at the level where new counters are defined.

```
\let\H@definecounter\@definecounter
\def\@definecounter#1{%
  \H@definecounter{#1}%
  \expandafter\def\csname theH#1\endcsname{\arabic{#1}}%
}
```

But what if they have used the optional argument to e.g. `\newtheorem` to determine when the numbering is reset? OK, we'll trap that too.

```
\let\H@newctr\@newctr
\def\@newctr#1[#2]{%
  \H@newctr#1[{#2}]%
  \expandafter\def\csname theH#1\endcsname{%
    \csname the\@ifundefined{theH#2}{}{H}#2\endcsname.\arabic{#1}%
  }%
}
```

40 AMSLaTeX compatibility

Oh, no, they don't use anything as simple as `\refstepcounter` in the AMS! We need to intercept some low-level operations of theirs. Damned if we are going to try and work out what they get up to. Just stick a label of 'AMS' on the front, and use the label *they* worked out. If that produces something invalid, I give up. They'll change all the code again anyway, I expect.

```
\let\Hmake@df@tag@@\make@df@tag@@
\def\make@df@tag@@#1{%
  \Hmake@df@tag@@{#1}%
  \Hy@GlobalStepCount\Hy@linkcounter
  \xdef\@currentHref{AMS.\the\Hy@linkcounter}%
  \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
}
\let\Hmake@df@tag@@@\make@df@tag@@@
\def\make@df@tag@@@#1{%
  \Hmake@df@tag@@@{#1}%
  \Hy@GlobalStepCount\Hy@linkcounter
  \xdef\@currentHref{AMS.\the\Hy@linkcounter}%
  \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
}
```

Only play with `\seteqlebal` if we are using pdftex. Other drivers cause problems; requested by Michael Downes (AMS).

```
\@ifpackagewith{hyperref}{pdftex}{%
   \let\H@seteqlabel\@seteqlabel
   \def\@seteqlabel#1{%
     \H@seteqlabel{#1}%
     \xdef\@currentHref{AMS.\the\Hy@linkcounter}%
     \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
   }%
}{}
```

This code I simply cannot remember what I was trying to achieve. The final result seems to do nothing anyway.

```
\let\H@tagform@\tagform@
```

```
\def\tagform@#1{%
  \maketag@@@{\hyper@@anchor{\@currentHref}%
  {(\ignorespaces#1\unskip)}}%
}
\def\eqref#1{\textup{\H@tagform@{\ref{#1}}}}
```

40.1 `\@addtoreset` and `\numberwithin` patches

`\@addtoreset` puts a counter to the reset list of another counter. After a reset the counter starts again with perhaps already used values. Therefore the hyperref version of the counter print command `\theHcounter` is redefined in order to add the parent counter.

```
\let\HyOrg@addtoreset\@addtoreset
\def\@addtoreset#1#2{%
  \HyOrg@addtoreset{#1}{#2}%
  \expandafter\xdef\csname theH#1\endcsname{%
    \expandafter\noexpand
        \csname the\@ifundefined{theH#2}{}H#2\endcsname
    .\noexpand\the\noexpand\value{#1}%
  }%
}
```

`\numberwithin` A appropiate definition of hyperref's companion counter (`\theH...`) is added for correct link names.

```
⟨/package⟩
⟨*check⟩
\checkpackage{amsmath}[1999/12/14 - 2000/06/06]
\checkcommand\newcommand{\numberwithin}[3][\arabic]{%
  \@ifundefined{c@#2}{\@nocounterr{#2}}{%
    \@ifundefined{c@#3}{\@nocnterr{#3}}{%
      \@addtoreset{#2}{#3}%
      \@xp\xdef\csname the#2\endcsname{%
        \@xp\@nx\csname the#3\endcsname .\@nx#1{#2}%
      }%
    }%
  }%
}%
⟨/check⟩
⟨*package⟩
\@ifpackageloaded{amsmath}{%
  \@ifpackagelater{amsmath}{1999/12/14}{%
    \renewcommand*{\numberwithin}[3][\arabic]{%
      \@ifundefined{c@#2}{\@nocounterr{#2}}{%
        \@ifundefined{c@#3}{\@nocnterr{#3}}{%
          \HyOrg@addtoreset{#2}{#3}%
          \@xp\xdef\csname the#2\endcsname{%
            \@xp\@nx\csname the#3\endcsname .\@nx#1{#2}%
          }%
          \@xp\xdef\csname theH#2\endcsname{%
            \@xp\@nx
            \csname the\@ifundefined{theH#3}{}H#3\endcsname
            .\@nx#1{#2}%
          }%
        }%
      }%
    }%
  }{%
    \Hy@WarningNoLine{%
```

```
      \string\numberwithin\space of package `amsmath'
      only fixed\MessageBreak
      for version 2000/06/06 v2.12 or newer%
    }%
  }
}{}
```

41 Included figures

Simply intercept the low level graphics package macro.

```
\ifHy@figures
  \let\Hy@Gin@setfile\Gin@setfile
  \def\Gin@setfile#1#2#3{%
    \hyperimage{#3}{\Hy@Gin@setfile{#1}{#2}{#3}}%
  }
\fi
\Hy@DisableOption{hyperfigures}
```

42 hyperindex entries

Internal command names are prefixed with `\HyInd@`.

Hyper-indexing works crudely, by forcing code onto the end of the index entry with the | feature; this puts a hyperlink around the printed page numbers. It will not proceed if the author has already used the | specifier for something like emboldening entries. That would make Makeindex fail (cannot have two | specifiers). The solution is for the author to use generic coding, and put in the requisite `\hyperpage` in his/her own macros along with the boldness.

This section is poor stuff; it's open to all sorts of abuse. Sensible large projects will design their own indexing macros any bypass this.

```
\ifHy@hyperindex
  \def\HyInd@ParenLeft{(}%
  \def\HyInd@ParenRight{)}%
  \Hy@nextfalse
  \@ifpackageloaded{multind}{\Hy@nexttrue}{}%
  \@ifpackageloaded{index}{\Hy@nexttrue}{}%
  \begingroup
    \lccode`\|=\expandafter`\HyInd@EncapChar\relax
  \lowercase{\endgroup
    \ifHy@next
      \let\HyInd@org@wrindex\@wrindex
      \def\@wrindex#1#2{\HyInd@@wrindex{#1}#2||\\}%
      \def\HyInd@@wrindex#1#2|#3|#4\\{%
        \ifx\\#3\\%
          \HyInd@org@wrindex{#1}{#2|hyperpage}%
        \else
          \def\Hy@temp@A{#3}%
          \ifcase0\ifx\Hy@temp@A\HyInd@ParenLeft 1\fi
                  \ifx\Hy@temp@A\HyInd@ParenRight 1\fi
                  \relax
            \HyInd@org@wrindex{#1}{#2|#3}%
          \else
            \HyInd@org@wrindex{#1}{#2|#3hyperpage}%
          \fi
        \fi
```

```
    }%
  \else
    \def\@wrindex#1{\@@wrindex#1||\\}
    \def\@@wrindex#1|#2|#3\\{%
      \if@filesw
        \ifx\\#2\\%
          \protected@write\@indexfile{}{%
            \string\indexentry{#1|hyperpage}{\thepage}%
          }%
        \else
          \def\Hy@temp@A{#2}%
          \ifcase0\ifx\Hy@temp@A\HyInd@ParenLeft 1\fi
                  \ifx\Hy@temp@A\HyInd@ParenRight 1\fi
                  \relax
            \protected@write\@indexfile{}{%
              \string\indexentry{#1|#2}{\thepage}%
            }%
          \else
            \protected@write\@indexfile{}{%
               \string\indexentry{#1|#2hyperpage}{\thepage}%
            }%
          \fi
        \fi
      \fi
      \endgroup
      \@esphack
    }%
  \fi
}%
\fi
\Hy@DisableOption{hyperindex}
\Hy@DisableOption{encap}
```

This again is quite flaky, but allow for the common situation of a page range separated by en-rule. We split this into two different hyperlinked pages.

```
\def\hyperpage#1{\@hyperpage#1----\\}
\def\@hyperpage#1--#2--#3\\{%
  \ifx\\#2\\%
    \@commahyperpage{#1}%
  \else
    \HyInd@pagelink{#1}--\HyInd@pagelink{#2}%
  \fi
}
\def\@commahyperpage#1{\@@commahyperpage#1, ,\\}
\def\@@commahyperpage#1, #2,#3\\{%
  \ifx\\#2\\%
    \HyInd@pagelink{#1}%
  \else
    \HyInd@pagelink{#1}, \HyInd@pagelink{#2}%
  \fi
}
```

The argument of \hyperpage can be empty. And the line breaking algorithm of Makeindex can introduce spaces. So we have to remove them.

```
\def\HyInd@pagelink#1{%
  \begingroup
    \toks@={}%
    \HyInd@removespaces#1 \@nil
```

```
  \endgroup
}
\def\HyInd@removespaces#1 #2\@nil{%
  \toks@=\expandafter{\the\toks@#1}%
  \ifx\\#2\\%
    \edef\x{\the\toks@}%
    \ifx\x\@empty
    \else
      \hyperlink{page.\the\toks@}{\the\toks@}%
    \fi
  \else
    \Hy@ReturnAfterFi{%
      \HyInd@removespaces#2\@nil
    }%
  \fi
}
```

43 Compatibility with foiltex

```
\@ifclassloaded{foils}{%
  \providecommand*\ext@table{lot}%
  \providecommand*\ext@figure{lof}%
}{}
```

44 Compatibility with seminar slide package

This requires `seminar.bg2`, version 1.6 or later. Contributions by Denis Girou (`denis.girou@idris.fr`).

```
\@ifclassloaded{seminar}{%
  \Hy@seminarslidestrue\newcommand\theHslide{\arabic{slide}}%
}{%
  \Hy@seminarslidesfalse
}
\@ifpackageloaded{slidesec}{%
  \newcommand\theHslidesection   {\arabic{slidesection}}%
  \newcommand\theHslidesubsection{%
    \theHslidesection.\arabic{slidesubsection}%
  }%
  \def\slide@heading[#1]#2{%
    \H@refstepcounter{slidesection}%
    \@addtoreset{slidesubsection}{slidesection}%
    \addtocontents{los}{%
      \protect\l@slide{\the\c@slidesection}{\ignorespaces#1}%
        {\@SCTR}{slideheading.\theslidesection}%
    }%
    \def\Hy@tempa{#2}%
    \ifx\Hy@tempa\@empty
    \else
      {%
        \edef\@currentlabel{%
          \csname p@slidesection\endcsname\theslidesection
        }%
        \makeslideheading{#2}%
      }%
    \fi
    \gdef\theslideheading{#1}%
```

```
  \gdef\theslidesubheading{}%
  \ifHy@bookmarksnumbered
    \def\Hy@slidetitle{\theslidesection\space #1}%
  \else
    \def\Hy@slidetitle{#1}%
  \fi
  \ifHy@hypertexnames
     \ifHy@naturalnames
       \hyper@@anchor{slideheading.\theslidesection}{\relax}%
       \Hy@writebookmark
         {\theslidesection}%
         {\Hy@slidetitle}%
         {slideheading.\theslidesection}%
         {1}%
         {toc}%
     \else
       \hyper@@anchor{slideheading.\theHslidesection}{\relax}%
       \Hy@writebookmark
         {\theslidesection}%
         {\Hy@slidetitle}%
         {slideheading.\theHslidesection}%
         {1}%
         {toc}%
     \fi
  \else
    \Hy@GlobalStepCount\Hy@linkcounter
    \hyper@@anchor{slideheading.\the\Hy@linkcounter}{\relax}%
    \Hy@writebookmark
      {\theslidesection}%
      {\Hy@slidetitle}%
      {slideheading.\the\Hy@linkcounter}%
      {1}%
      {toc}%
  \fi
}%
\def\slide@subheading[#1]#2{%
  \H@refstepcounter{slidesubsection}%
  \addtocontents{los}{%
    \protect\l@subslide{\the\c@slidesubsection}{\ignorespaces#1}%
      {\@SCTR}{slideheading.\theslidesubsection}%
  }%
  \def\Hy@tempa{#2}%
  \ifx\Hy@tempa\@empty
  \else
    {%
      \edef\@currentlabel{%
        \csname p@slidesubsection\endcsname\theslidesubsection
      }%
      \makeslidesubheading{#2}%
    }%
  \fi
  \gdef\theslidesubheading{#1}%
  \ifHy@bookmarksnumbered
    \def\Hy@slidetitle{\theslidesubsection\space #1}%
  \else
    \def\Hy@slidetitle{#1}%
  \fi
```

```
  \ifHy@hypertexnames
    \ifHy@naturalnames
      \hyper@@anchor{slideheading.\theslidesubsection}{\relax}%
      \Hy@writebookmark
        {\theslidesubsection}%
        {\Hy@slidetitle}%
        {slideheading.\theslidesubsection}%
        {2}%
        {toc}%
    \else
      \hyper@@anchor{slideheading.\theHslidesubsection}{\relax}%
      \Hy@writebookmark
        {\theslidesubsection}%
        {\Hy@slidetitle}%
        {slideheading.\theHslidesubsection}%
        {2}%
        {toc}%
    \fi
  \else
    \Hy@GlobalStepCount\Hy@linkcounter
    \hyper@@anchor{slideheading.\the\Hy@linkcounter}{\relax}%
    \Hy@writebookmark
      {\theslidesubsection}%
      {\Hy@slidetitle}%
      {slideheading.\the\Hy@linkcounter}%
      {1}%
      {toc}%
  \fi
}%
\providecommand*{\listslidename}{List of Slides}%
\def\listofslides{%
  \section*{%
    \listslidename
    \@mkboth{%
      \expandafter\MakeUppercase\listslidename
    }{%
      \expandafter\MakeUppercase\listslidename
    }%
  }%
  \def\l@slide##1##2##3##4{%
    \slide@undottedcline{%
      \slidenumberline{##3}{\hyperlink{##4}{##2}}%
    }{}%
  }%
  \let\l@subslide\l@slide
  \@startlos
}%
\def\slide@contents{%
  \def\l@slide##1##2##3##4{%
    \slide@cline{\slidenumberline{##3}{\hyperlink{##4}{##2}}}{##3}%
  }%
  \let\l@subslide\@gobblefour
  \@startlos
}%
\def\Slide@contents{%
  \def\l@slide##1##2##3##4{%
    \ifcase\lslide@flag
```

```
      \message{##1 ** \the\c@slidesection}%
      \ifnum##1>\c@slidesection
        \def\lslide@flag{1}%
        {%
          \large
          \slide@cline{%
            \slidenumberline{$\Rightarrow\bullet$}%
              {\hyperlink{##4}{##2}}%
          }{##3}%
        }%
      \else
        {%
          \large
          \slide@cline{%
            \slidenumberline{$\surd\;\bullet$}%
              {\hyperlink{##4}{##2}}%
          }{##3}%
        }%
      \fi
    \or
      \def\lslide@flag{2}%
      {%
        \large
        \slide@cline{%
          \slidenumberline{$\bullet$}%
            {\hyperlink{##4}{##2}}%
        }{##3}%
      }%
    \or
      {%
        \large
        \slide@cline{%
          \slidenumberline{$\bullet$}%
           {\hyperlink{##4}{##2}}%
        }{##3}%
      }%
    \fi
  }%
  \def\l@subslide##1##2##3##4{%
    \ifnum\lslide@flag=1
      \@undottedtocline{2}{3.8em}{3.2em}{\hyperlink{##4}{##2}}{}%
    \fi
  }%
  \def\lslide@flag{0}%
  \@startlos
}%
}{}
```

This breaks TeX4ht, so leave it to last. Emend `\@setref` to put out a hypertext link as well as its normal text (which is used as an anchor). (`\endinput` have to be on the same line like `\fi`, or you have to use `\expandafter` before.)

```
\ifHy@texht
  \expandafter\endinput
\fi
\let\real@setref\@setref
\def\@setref#1#2#3{% csname, extract group, refname
  \ifx#1\relax
    \protect\G@refundefinedtrue
```

```
    \nfss@text{\reset@font\bfseries ??}%
    \@latex@warning{%
      Reference `#3' on page \thepage \space undefined%
    }%
  \else
    \expandafter\Hy@setref@link#1\@empty\@empty\@nil{#2}%
  \fi
}
```

`\Hy@setref@link` extracts the reference information entries, because `\hyper@@link` does not expand arguments for the automatic link type detection.

```
\def\Hy@setref@link#1#2#3#4#5#6\@nil#7{%
  \begingroup
    \toks0={\hyper@@link{#5}{#4}}%
    \toks1=\expandafter{#7{#1}{#2}{#3}{#4}{#5}}%
    \edef\x{\endgroup
      \the\toks0 {\the\toks1 }%
    }%
  \x
}
\def\@pagesetref#1#2#3{% csname, extract macro, ref
  \ifx#1\relax
    \protect\G@refundefinedtrue
    \nfss@text{\reset@font\bfseries ??}%
    \@latex@warning{%
      Reference `#3' on page \thepage \space undefined%
    }%
  \else
    \protect\hyper@@link
      {\expandafter\@fifthoffive#1}%
      {page.\expandafter\@secondoffive#1}%
      {\expandafter\@secondoffive#1}%
  \fi
}
```

```
⟨/package⟩
⟨*check⟩
\checklatex
\checkcommand\def\@setref#1#2#3{%
  \ifx#1\relax
    \protect\G@refundefinedtrue
    \nfss@text{\reset@font\bfseries ??}%
    \@latex@warning{%
      Reference `#3' on page \thepage\space undefined%
    }%
  \else
    \expandafter#2#1\null
  \fi
}
⟨/check⟩
⟨*package⟩
```

Now some extended referencing. `\ref*` and `\pageref*` are not linked, and `\autoref` prefixes with a tag based on the type.

```
\def\@refstar#1{%
  \Hy@safe@activestrue
  \expandafter\real@setref\csname r@#1\endcsname\@firstoffive{#1}%
  \Hy@safe@activesfalse
}
```

```
\def\@pagerefstar#1{%
  \Hy@safe@activestrue
  \expandafter\real@setref\csname r@#1\endcsname\@secondoffive{#1}%
  \Hy@safe@activesfalse
}
\DeclareRobustCommand\autoref{%
  \@ifstar{\HyRef@autoref\@gobbletwo}{\HyRef@autoref\hyper@@link}%
}
\def\HyRef@autoref#1#2{%
  \begingroup
    \Hy@safe@activestrue
    \expandafter\HyRef@autosetref\csname r@#2\endcsname{#2}{#1}%
  \endgroup
}
\def\HyRef@autosetref#1#2#3{% link command, csname, refname
  \ifcase 0\ifx#1\relax 1\fi\ifx#1\Hy@varioref@undefined 1\fi\relax
    \edef\HyRef@thisref{\expandafter\@fourthoffive#1\@empty\@empty\@empty}%
    \expandafter\HyRef@testreftype\HyRef@thisref\\%
    \Hy@safe@activesfalse
    #3{%
      \expandafter\@fifthoffive#1%
    }{%
      \expandafter\@fourthoffive#1\@empty\@empty\@empty
    }{%
      \HyRef@currentHtag
      \expandafter\@firstoffive#1\@empty\@empty\@empty
      \null
    }%
  \else
    \protect\G@refundefinedtrue
    \nfss@text{\reset@font\bfseries ??}%
    \@latex@warning{%
      Reference `#2' on page \thepage\space undefined%
    }%
  \fi
}
\def\HyRef@testreftype#1.#2\\{%
  \@ifundefined{#1autorefname}{%
    \@ifundefined{#1name}{%
      \def\HyRef@currentHtag{}%
      \@latex@warning{no tag name for #1 at \the\inputlineno}%
    }{%
      \edef\HyRef@currentHtag{%
        \expandafter\noexpand\csname#1name\endcsname
        \noexpand~%
      }%
    }%
  }{%
    \edef\HyRef@currentHtag{%
      \expandafter\noexpand\csname#1autorefname\endcsname
      \noexpand~%
    }%
  }%
}
\def\HyRef@currentHtag{}
```

Defaults for the names that `\autoref` uses.

```
\providecommand*\AMSautorefname{\equationautorefname}
```

```
\providecommand*\Hfootnoteautorefname{\footnoteautorefname}
\providecommand*\Itemautorefname{\itemautorefname}
\providecommand*\itemautorefname{item}
\providecommand*\equationautorefname{Equation}
\providecommand*\footnoteautorefname{footnote}
\providecommand*\itemautorefname{item}
\providecommand*\figureautorefname{Figure}
\providecommand*\tableautorefname{Table}
\providecommand*\partautorefname{Part}
\providecommand*\appendixautorefname{Appendix}
\providecommand*\chapterautorefname{chapter}
\providecommand*\sectionautorefname{section}
\providecommand*\subsectionautorefname{subsection}
\providecommand*\subsubsectionautorefname{subsubsection}
\providecommand*\paragraphautorefname{paragraph}
\providecommand*\subparagraphautorefname{subparagraph}
\providecommand*\FancyVerbLineautorefname{line}
\providecommand*\theoremautorefname{Theorem}
```

⟨/package⟩

45 Configuration files

45.1 PS/PDF strings

Some drivers write PS or PDF strings. These strings are delimited by parentheses, therefore a lonely unmatched parenthesis must be avoided to avoid PS or PDF syntax errors. Also the backslash character itself has to be protected.

`\Hy@pstringdef` Therefore such strings should be passed through `\Hy@pstringdef`. The first argument holds a macro for the result, the second argument is the string that needs protecting. Since version 1.30.0 pdfTEX offers `\pdfescapestring`.

```
⟨*pdftex | dvipdfm | vtex | pdfmarkbase | dviwindo⟩
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdfescapestring\endcsname\relax
  \begingroup
    \catcode`\|=0 %
    \@makeother\\%
  |@firstofone{|endgroup
    |def|Hy@pstringdef#1#2{%
      |edef#1{#2}%
      |@onelevel@sanitize#1%
      |edef#1{|expandafter|Hy@ExchangeBackslash#1\|@nil}%
      |edef#1{|expandafter|Hy@ExchangeLeftParenthesis#1(|@nil}%
      |edef#1{|expandafter|Hy@ExchangeRightParenthesis#1)|@nil}%
    }%
    |def|Hy@ExchangeBackslash#1\#2|@nil{%
      #1%
      |ifx|\#2|\%
      |else
        \\%
        |Hy@ReturnAfterFi{%
          |Hy@ExchangeBackslash#2|@nil
        }%
      |fi
    }%
  }
```

```
  \def\Hy@ExchangeLeftParenthesis#1(#2\@nil{%
    #1%
    \ifx\\#2\\%
    \else
      \@backslashchar(%
      \Hy@ReturnAfterFi{%
        \Hy@ExchangeLeftParenthesis#2\@nil
      }%
    \fi
  }
  \def\Hy@ExchangeRightParenthesis#1)#2\@nil{%
    #1%
    \ifx\\#2\\%
    \else
      \@backslashchar)%
      \Hy@ReturnAfterFi{%
        \Hy@ExchangeRightParenthesis#2\@nil
      }%
    \fi
  }
\else
  \def\Hy@pstringdef#1#2{%
    \edef#1{\pdfescapestring{#2}}%
  }%
\fi
```
⟨/pdftex | dvipdfm | vtex | pdfmarkbase | dviwindo⟩

45.2 pdftex

⟨∗pdftex⟩

This driver is for Han The Thanh's TEX variant which produces PDF directly. This has new primitives to do PDF things, which usually translate almost directly to PDF code, so there is a lot of flexibility which we do not at present harness.

First, allow for some changes and additions to pdftex syntax:

```
\def\setpdflinkmargin#1{\pdflinkmargin#1}
\ifx\pdfstartlink\@undefined% less than version 14
  \let\pdfstartlink\pdfannotlink
  \let\pdflinkmargin\@tempdima
  \let\pdfxform\pdfform
  \let\pdflastxform\pdflastform
  \let\pdfrefxform\pdfrefform
\else
  \pdflinkmargin1pt
\fi
```

First set up the default linking

```
\providecommand*\@pdfview{XYZ}
```

First define the anchors:

```
\def\new@pdflink#1{%
  \ifHy@verbose
    \typeout{pdftex: define anchor at line \the\inputlineno: #1}%
  \fi
  \Hy@SaveLastskip
  \Hy@pstringdef\Hy@pstringDest{#1}%
  \Hy@DestName\Hy@pstringDest\@pdfview
  \Hy@RestoreLastskip
}
```

```
\let\pdf@endanchor\@empty
```

\Hy@DestName Wrap the call of `\pdfdest name` in `\Hy@DestName`. Then it can easier be catched by package `hypdestopt`.

```
\def\Hy@DestName#1#2{%
  \pdfdest name{#1}#2\relax
}
```

Now the links; the interesting part here is the set of attributes which define how the link looks. We probably want to add a border and color it, but there are other choices. This directly translates to PDF code, so consult the manual for how to change this. We will add an interface at some point.

```
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\def\Hy@undefinedname{UNDEFINED}
\def\find@pdflink#1#2{%
  \leavevmode
  \protected@edef\Hy@testname{#2}%
  \ifx\Hy@testname\@empty
    \let\Hy@testname\Hy@undefinedname
  \else
    \Hy@pstringdef\Hy@testname\Hy@testname
  \fi
  \Hy@StartlinkName{%
    \Hy@setpdfborder
    \ifx\@pdfhighlight\@empty
    \else
      /H\@pdfhighlight
    \fi
    /C[\CurrentBorderColor]%
  }\Hy@testname
  \expandafter\Hy@colorlink\csname @#1color\endcsname
}
\def\Hy@StartlinkName#1#2{%
  \pdfstartlink attr{#1}goto name{#2}\relax
}
\def\close@pdflink{\Hy@endcolorlink\pdfendlink}
\def\hyper@anchor#1{\new@pdflink{#1}\anchor@spot\pdf@endanchor}
\def\hyper@anchorstart#1{\new@pdflink{#1}\Hy@activeanchortrue}
\def\hyper@anchorend{\pdf@endanchor\Hy@activeanchorfalse}
\def\hyper@linkstart#1#2{%
  \edef\CurrentBorderColor{\csname @#1bordercolor\endcsname}%
  \find@pdflink{#1}{#2}}
\def\hyper@linkend{\close@pdflink}
\def\hyper@link#1#2#3{%
  \edef\CurrentBorderColor{\csname @#1bordercolor\endcsname}%
  \find@pdflink{#1}{#2}#3\close@pdflink
}
\def\CurrentBorderColor{\@linkbordercolor}
\def\hyper@linkurl#1#2{%
  \begingroup
    \Hy@pstringdef\Hy@pstringURI{#2}%
    \hyper@chars
    \leavevmode
    \pdfstartlink
      attr{%
        \Hy@setpdfborder
```

```
        \ifx\@pdfhightlight\@empty
        \else
          /H\@pdfhighlight
        \fi
        /C[\@urlbordercolor]%
      }%
      user{%
       /Subtype/Link%
       /A<<%
         /Type/Action%
         /S/URI%
         /URI(\Hy@pstringURI)%
       >>%
      }%
      \relax
    \Hy@colorlink\@urlcolor#1%
    \close@pdflink
  \endgroup
}
\def\hyper@linkfile#1#2#3{% anchor text, filename, linkname
  \begingroup
     \Hy@pstringdef\Hy@pstringF{#2}%
     \Hy@pstringdef\Hy@pstringD{#3}%
    \leavevmode
    \pdfstartlink
      attr{%
        \Hy@setpdfborder
        \ifx\@pdfhighlight\@empty
        \else
          /H\@pdfhighlight
        \fi
        /C[\@filebordercolor]%
      }%
      user {%
        /Subtype/Link%
        /A<<%
          /F(\Hy@pstringF)%
          /S/GoToR%
          \ifHy@newwindow /NewWindow true\fi
```

If #3 is empty, page 0; if its a number, Page number, otherwise a named destination.

```
 \afterassignment\xxx\count@=0\foo!%

\def\xxx#1!{%
  \ifx\xxx#1\xxx
     foo was an integer
  \else
     it wasnt
  \fi}


          \ifx\\#3\\%
            /D[0 \@pdfstartview]%
          \else
            /D(\Hy@pstringD)%
          \fi
        >>%
      }%
```

```
      \relax
    \Hy@colorlink\@filecolor#1%
    \close@pdflink
  \endgroup
}
\def\@hyper@launch run:#1\\#2#3{% filename, anchor text linkname
  \begingroup
    \Hy@pstringdef\Hy@pstringF{#1}%
    \Hy@pstringdef\Hy@pstringP{#3}%
    \leavevmode
    \pdfstartlink
      attr{%
        \Hy@setpdfborder
        \ifx\@pdfhighlight\@empty
        \else
          /H\@pdfhighlight
        \fi
        /C[\@runbordercolor]%
      }%
      user {%
        /Subtype/Link%
        /A<<%
          /F(\Hy@pstringF)%
          /S/Launch%
          \ifHy@newwindow /NewWindow true\fi
          \ifx\\#3\\%
          \else
            /Win<</P(\Hy@pstringP)/F(\Hy@pstringF)>>%
          \fi
        >>%
      }%
      \relax
    \Hy@colorlink\@filecolor#2%
    \close@pdflink
  \endgroup
}
```

\@pdfproducer

```
\ifx\@pdfproducer\relax
  \def\@pdfproducer{pdfTeX}
  \ifx\eTeXversion\@undefined
  \else
    \ifx\eTeXversion\relax
    \else
      \ifnum\eTeXversion>0 %
        \def\@pdfproducer{pdfeTeX}
      \fi
    \fi
  \fi
  \ifx\pdftexversion\@undefined
  \else
    \ifnum\pdftexversion<100 %
      \edef\@pdfproducer{%
        \@pdfproducer
        \the\pdftexversion.\pdftexrevision
      }
    \else
```

```
      \ifnum\pdftexversion<130 %
        \edef\@pdfproducer{%
          \@pdfproducer-%
          \expandafter\@car\the\pdftexversion\@empty\@nil.%
          \expandafter\@cdr\the\pdftexversion\@empty\@nil
          \pdftexrevision
        }
      \else
        \ifnum\pdftexversion<140 %
        \else
          \def\@pdfproducer{pdfTeX}%
        \fi
        \edef\@pdfproducer{%
          \@pdfproducer-%
          \expandafter\@car\the\pdftexversion\@empty\@nil.%
          \expandafter\@cdr\the\pdftexversion\@empty\@nil.%
          \pdftexrevision
        }%
      \fi
    \fi
  \fi
\fi
```

\PDF@SetupDox

```
\def\PDF@SetupDoc{%
  \ifx\@pdfpagescrop\@empty
  \else
    \edef\process@me{%
      \pdfpagesattr={%
        /CropBox[\@pdfpagescrop]%
        \expandafter\ifx\expandafter\\\the\pdfpagesattr\\%
        \else
          ^^J\the\pdfpagesattr
        \fi
      }%
    }%
    \process@me
  \fi
  \Hy@pstringdef\Hy@pstringB{\@baseurl}%
  \pdfcatalog{%
    /PageMode/\@pdfpagemode
    \ifx\@baseurl\@empty
    \else
      /URI<</Base(\Hy@pstringB)>>%
    \fi
  }%
  \ifx\@pdfstartview\@empty
  \else
    openaction goto page \@pdfstartpage {\@pdfstartview}%
  \fi
  \edef\Hy@temp{%
    \ifHy@toolbar\else /HideToolbar true\fi
    \ifHy@menubar\else /HideMenubar true\fi
    \ifHy@windowui\else /HideWindowUI true\fi
    \ifHy@fitwindow /FitWindow true\fi
    \ifHy@centerwindow /CenterWindow true\fi
    \ifHy@displaydoctitle /DisplayDocTitle true\fi
```

```
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \pdfcatalog{%
    \ifx\Hy@temp\@empty
    \else
      /ViewerPreferences<<\Hy@temp>>%
    \fi
    \Hy@UseNameKey{PageLayout}\@pdfpagelayout
    \ifx\@pdflang\@empty
    \else
      /Lang(\@pdflang)%
    \fi
  }%
}
```

\PDF@FinishDoc

```
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \pdfinfo{%
    /Author(\@pdfauthor)%
    /Title(\@pdftitle)%
    /Subject(\@pdfsubject)%
    /Creator(\@pdfcreator)%
    \ifx\@pdfcreationdate\@empty
    \else
      /CreationDate(\@pdfcreationdate)%
    \fi
    \ifx\@pdfmoddate\@empty
    \else
      /ModDate(\@pdfmoddate)%
    \fi
    \ifx\@pdfproducer\relax
    \else
      /Producer(\@pdfproducer)%
    \fi
    /Keywords(\@pdfkeywords)%
  }%
  \Hy@DisableOption{pdfauthor}%
```

```
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
}
```

\hyper@pagetransition

\@pdfpagetransition is initialized with \relax. So it indicates, if option pdfpagetransition is used. First previous /Trans entries are removed. If a new /Trans key exists, it is appended to \pdfpageattr.

```
\def\hyper@pagetransition{%
  \ifx\@pdfpagetransition\relax
  \else
    \expandafter\Hy@RemoveTransPageAttr\the\pdfpageattr^^J/Trans{}>>\END
    \ifx\@pdfpagetransition\@empty
    \else
      \edef\@processme{%
        \global\pdfpageattr{%
          \the\pdfpageattr
          ^^J/Trans << /S /\@pdfpagetransition\space >>%
        }%
      }%
      \@processme
    \fi
  \fi
}
```

\Hy@RemoveTransPageAttr

Macro \Hy@RemoveTransPageAttr removes a /Trans entry from \pdfpageattr. It is called with the end marker ^^J/Trans{}>>\END. The trick is the empty group that does not appear in legal \pdfpageattr code. It appears in argument #2 and shows, whether the parameter text catches a really /Trans object or the end marker.

```
\gdef\Hy@RemoveTransPageAttr#1^^J/Trans#2#3>>#4\END{%
  \ifx\\#2\\%
    \global\pdfpageattr{#1}%
  \else
    \Hy@RemoveTransPageAttr#1#4\END
  \fi
}
```

\hyper@pageduration

\@pdfpageduration is initialized with \relax. So it indicates, if option pdfpageduration is used. First previous /Dur entries are removed. If a new /Dur key exists, it is appended to \pdfpageattr.

```
\def\hyper@pageduration{%
  \ifx\@pdfpageduration\relax
  \else
    \expandafter\Hy@RemoveDurPageAttr\the\pdfpageattr^^J/Dur{} \END
    \ifx\@pdfpageduration\@empty
    \else
      \edef\@processme{%
        \global\pdfpageattr{%
          \the\pdfpageattr
          ^^J/Dur \@pdfpageduration\space
        }%
      }%
      \@processme
```

```
    \fi
  \fi
}
```

\Hy@RemoveDurPageAttr Macro \Hy@RemoveDurPageAttr removes a /Dur entry from \pdfpageattr. It is called with the end marker ^^J/Dur{} \END. The trick is the empty group that does not appear in legal \pdfpageattr code. It appears in argument #2 and shows, whether the parameter text catches a really /Dur object or the end marker.

```
\gdef\Hy@RemoveDurPageAttr#1^^J/Dur#2#3 #4\END{%
  \ifx\\#2\\%
    \global\pdfpageattr{#1}%
  \else
    \Hy@RemoveDurPageAttr#1#4\END
  \fi
}
```

\hyper@pagehidden The boolean value of the key /Hid is stored in switch \ifHy@pdfpagehidden. First previous /Hid entries are removed, then the new one is appended, if the value is true (the PDF default is false).

```
\def\hyper@pagehidden{%
  \ifHy@useHidKey
    \expandafter\Hy@RemoveHidPageAttr\the\pdfpageattr^^J/Hid{} \END
    \ifHy@pdfpagehidden
      \edef\@processme{%
        \global\pdfpageattr{%
          \the\pdfpageattr
          ^^J/Hid true % SPACE
        }%
      }%
      \@processme
    \fi
  \fi
}
```

\Hy@RemoveHidPageAttr Macro \Hy@RemoveHidPageAttr removes a /Hid entry from \pdfpageattr. It is called with the end marker ^^J/Hid{} \END. The trick is the empty group that does not appear in legal \pdfpageattr code. It appears in argument #2 and shows, whether the parameter text catches a really /Hid object or the end marker.

```
\gdef\Hy@RemoveHidPageAttr#1^^J/Hid#2#3 #4\END{%
  \ifx\\#2\\%
    \global\pdfpageattr{#1}%
  \else
    \Hy@RemoveHidPageAttr#1#4\END
  \fi
}
```

Let us explicitly turn on PDF generation; they can reverse this decision in the document, but since we are emitting PDF links anyway, we *must* be in PDF mode.

```
\pdfoutput=1
\pdfcompresslevel=9
\AtBeginDocument{%
  \ifHy@setpagesize
    \expandafter\@firstofone
  \else
    \expandafter\@gobble
  \fi
```

```
  {%
    \@ifclassloaded{seminar}{%
      \setlength{\pdfhorigin}{1truein}%
      \setlength{\pdfvorigin}{1truein}%
      \ifportrait
        \ifdim\paperwidth=\z@
        \else
          \setlength{\pdfpagewidth}{\strip@pt\paperwidth truept}%
        \fi
        \ifdim\paperheight=\z@
        \else
          \setlength{\pdfpageheight}{\strip@pt\paperheight truept}%
        \fi
      \else
        \ifdim\paperheight=\z@
        \else
          \setlength{\pdfpagewidth}{\strip@pt\paperheight truept}%
        \fi
        \ifdim\paperwidth=\z@
        \else
          \setlength{\pdfpageheight}{\strip@pt\paperwidth truept}%
        \fi
      \fi
    }{%
      \@ifundefined{stockwidth}{%
        \ifdim\paperwidth=\z@
        \else
          \setlength{\pdfpagewidth}{\paperwidth}%
        \fi
        \ifdim\paperheight=\z@
        \else
          \setlength{\pdfpageheight}{\paperheight}%
        \fi
      }{%
        \ifdim\stockwidth=\z@
        \else
          \setlength{\pdfpagewidth}{\stockwidth}%
        \fi
        \ifdim\stockheight=\z@
        \else
          \setlength{\pdfpageheight}{\stockheight}%
        \fi
      }%
    }%
  }%
  \Hy@DisableOption{setpagesize}%
}
\def\Acrobatmenu#1#2{%
  \leavevmode
  \pdfstartlink
    attr{%
      \Hy@setpdfborder
      \ifx\@pdfhighlight\@empty
      \else
        /H\@pdfhighlight
      \fi
      /C[\@menubordercolor]%
```

```
    }%
    user{
      /Subtype /Link
      /A<<%
        /S/Named/N/#1%
      >>%
    }%
    \relax
  \Hy@colorlink\@menucolor#2\close@pdflink
}
⟨/pdftex⟩
⟨*hypertex⟩
```

45.3 hypertex

The HyperTEX specification (this is borrowed from an article by Arthur Smith) says that conformant viewers/translators must recognize the following set of `\special` commands:

href: `html:<a href = "href_string">`

name: `html:<a name = "name_string">`

end: `html:</a>`

image: `html:<img src = "href_string">`

base_name: `html:<base href = "href_string">`

The *href*, *name* and *end* commands are used to do the basic hypertext operations of establishing links between sections of documents. The *image* command is intended (as with current html viewers) to place an image of arbitrary graphical format on the page in the current location. The *base_name* command is be used to communicate to the *dvi* viewer the full (URL) location of the current document so that files specified by relative URL's may be retrieved correctly.

The *href* and *name* commands must be paired with an *end* command later in the TEX file — the TEX commands between the two ends of a pair form an *anchor* in the document. In the case of an *href* command, the *anchor* is to be highlighted in the *dvi* viewer, and when clicked on will cause the scene to shift to the destination specified by *href_string*. The *anchor* associated with a name command represents a possible location to which other hypertext links may refer, either as local references (of the form `href="#name_string"` with the *name_string* identical to the one in the name command) or as part of a URL (of the form *URL#name_string*). Here *href_string* is a valid URL or local identifier, while name_string could be any string at all: the only caveat is that '`"`' characters should be escaped with a backslash (\), and if it looks like a URL name it may cause problems.

```
\def\PDF@FinishDoc{}
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{html:<base href="\@baseurl">}%
  \fi
}
\def\hyper@anchor#1{%
  \Hy@SaveLastskip
  \begingroup
```

```
    \let\protect=\string
    \hyper@chars
    \special{html:<a name=\hyper@quote #1\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \special{html:</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \begingroup
    \hyper@chars
    \special{html:<a name=\hyper@quote#1\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \special{html:</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@urltype{url}
\def\hyper@linkstart#1#2{%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\@urltype
    \special{html:<a href=\hyper@quote#2\hyper@quote>}%
  \else
    \begingroup
      \hyper@chars
      \special{html:<a href=\hyper@quote\##2\hyper@quote>}%
    \endgroup
  \fi
}
\def\hyper@linkend{%
  \special{html:</a>}%
  \Hy@endcolorlink
}
\def\hyper@linkfile#1#2#3{%
  \hyper@linkurl{#1}{\Hy@linkfileprefix#2\ifx\\#3\\\else\##3\fi}%
}
\def\hyper@linkurl#1#2{%
```

If we want to raise up the final link `\special`, we need to get its height; ask me why LaTeX constructs make this totally foul up, and make us revert to basic TeX. I do not know.

```
  \leavevmode
  \ifHy@raiselinks
    \setbox\@tempboxa=\color@hbox #1\color@endbox
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \hyper@chars
      \special{html:<a href=\hyper@quote#2\hyper@quote>}%
    }%
    \Hy@colorlink\@urlcolor#1%
    \@linkdim\ht\@tempboxa
```

Because of the interaction with the dvihps processor, we have to subtract a little from the height. This is not clean, or checked. Check with Mark Doyle about what gives here. It may not be needed with the new dvips (Jan 1997).

```
    \advance\@linkdim by -6.5\p@
    \raise\@linkdim\hbox{\special{html:</a>}}%
    \Hy@endcolorlink
  \else
    \begingroup
      \hyper@chars
      \special{html:<a href=\hyper@quote#2\hyper@quote>}%
      \Hy@colorlink\@urlcolor#1%
      \special{html:</a>}%
      \Hy@endcolorlink
    \endgroup
  \fi
}
\def\hyper@link#1#2#3{%
  \hyper@linkurl{#3}{\##2}%
}
\def\hyper@image#1#2{%
  \begingroup
    \hyper@chars
    \special{html:<img src=\hyper@quote#1\hyper@quote>}%
  \endgroup
}
⟨/hypertex⟩
⟨*dviwindo⟩
```

45.4 dviwindo

[This was developed by David Carlisle]. Within a file dviwindo hyperlinking is used, for external URL's a call to `\wwwbrowser` is made. (You can define this command before or after loading the hyperref package if the default `c:/netscape/netscape` is not suitable) Dviwindo could in fact handle external links to dvi files on the same machine without calling a web browser, but that would mean parsing the URL to recognise such, and this is currently not done.

This was more or less blindly copied from the hypertex cfg. For dviwindo, LaTeX must specify the size of the active area for links. For some hooks this information is available but for some, the start and end of the link are specified separately in which case a fixed size area of 10000000sp wide by `\baselineskip` high is used.

```
\providecommand*\wwwbrowser{c:\string\netscape\string\netscape}
\def\hyper@anchor#1{%
  \Hy@SaveLastskip
  \begingroup
    \let\protect=\string
    \special{mark: #1}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \special{mark: #1}%
```

```
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@linkstart#1#2{%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \special{button:
    10000000
    \number\baselineskip\space
    #2%
  }%
}
\def\hyper@linkend{%
  \Hy@endcolorlink
}
\def\hyper@link#1#2#3{%
  \setbox\@tempboxa=\color@hbox #3\color@endbox
  \leavevmode
  \ifHy@raiselinks
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \special{button:
        \number\wd\@tempboxa\space
        \number\ht\@tempboxa\space
        #2%
      }%
      \expandafter\Hy@colorlink\csname @#1color\endcsname#3%
      \Hy@endcolorlink
    }%
    \@linkdim\ht\@tempboxa
    \advance\@linkdim by -6.5\p@
    \raise\@linkdim\hbox{}%
  \else
    \special{button:
      \number\wd\@tempboxa\space
      \number\ht\@tempboxa\space
      #2%
    }%
    \exandafter\Hy@colorlink\csname @#1color\endcsname#3\Hy@endcolorlink
  \fi
}
\def\hyper@linkurl#1#2{%
  \begingroup
    \hyper@chars
    \leavevmode
    \setbox\@tempboxa=\color@hbox #1\color@endbox
    \ifHy@raiselinks
      \@linkdim\dp\@tempboxa
      \lower\@linkdim\hbox{%
        \special{button:
          \number\wd\@tempboxa\space
          \number\ht\@tempboxa\space
          launch: \wwwbrowser\space
          #2%
        }%
```

```
        \Hy@colorlink\@urlcolor#1\Hy@endcolorlink
      }%
      \@linkdim\ht\@tempboxa
      \advance\@linkdim by -6.5\p@
      \raise\@linkdim\hbox{}%
    \else
      \special{button:
        \number\wd\@tempboxa\space
        \number\ht\@tempboxa\space
        launch: \wwwbrowser\space
        #2%
      }%
      \Hy@colorlink\@urlcolor#1\Hy@endcolorlink
    \fi
  \endgroup
}
\def\hyper@linkfile#1#2#3{%
  \begingroup
    \hyper@chars
    \leavevmode
    \setbox\@tempboxa=\color@hbox #1\color@endbox
    \ifHy@raiselinks
      \@linkdim\dp\@tempboxa
      \lower\@linkdim\hbox{%
        \special{button:
          \number\wd\@tempboxa\space
          \number\ht\@tempboxa\space
          #3,
          file: #2%
        }%
        \Hy@colorlink\@filecolor#1\Hy@endcolorlink
      }%
      \@linkdim\ht\@tempboxa
      \advance\@linkdim by -6.5\p@
      \raise\@linkdim\hbox{}%
    \else
      \special{button:
        \number\wd\@tempboxa\space
        \number\ht\@tempboxa\space
        #3,
        file: #2
      }%
      \Hy@colorlink\@filecolor#1\Hy@endcolorlink
    \fi
  \endgroup
}
\ifx\@pdfproducer\relax
  \def\@pdfproducer{dviwindo + Distiller}
\fi
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \special{PDF: Keywords \@pdfkeywords}%
  \special{PDF: Title \@pdftitle}%
  \special{PDF: Creator \@pdfcreator}%
  \ifx\@pdfcreationdate\@empty
  \else
    \special{PDF: CreationDate \@pdfcreationdate}%
```

```
  \fi
  \ifx\@pdfmoddate\@empty
  \else
    \special{PDF: ModDate \@pdfmoddate}%
  \fi
  \special{PDF: Author \@pdfauthor}%
  \ifx\@pdfproducer\relax
  \else
    \special{PDF: Producer \@pdfproducer}%
  \fi
  \special{PDF: Subject \@pdfsubject}%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@disableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
}
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{PDF: Base \@baseurl}%
  \fi
  \ifx\@pdfpagescrop\@empty\else
    \special{PDF: BBox \@pdfpagescrop}%
  \fi
  \pdfmark{pdfmark=/DOCVIEW,
    Page=\@pdfstartpage,
    View=\@pdfstartview,
    PageMode=/\@pdfpagemode
  }%
  \ifx\@pdfpagescrop\@empty
  \else
    \pdfmark{pdfmark=/PAGES,CropBox=\@pdfpagescrop}%
  \fi
  \edef\Hy@temp{%
    \ifHy@toolbar\else /HideToolbar true\fi
    \ifHy@menubar\else /HideMenubar true\fi
    \ifHy@windowui\else /HideWindowUI true\fi
    \ifHy@fitwindow /FitWindow true\fi
    \ifHy@centerwindow /CenterWindow true\fi
    \ifHy@displaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
```

```
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \pdfmark{pdfmark=/PUT,
    Raw={%
      \string{Catalog\string} <<
        \ifx\Hy@temp\@empty
        \else
          /ViewerPreferences<<\Hy@temp>>%
        \fi
        \Hy@UseNameKey{PageLayout}\@pdfpagelayout
        \ifx\@pdflang\@empty
        \else
          /Lang(\@pdflang)%
        \fi
      >>%
    }%
  }%
}
⟨/dviwindo⟩
⟨*dvipdfm⟩
```

45.5 dvipdfm dvi to PDF converter

Provided by Mark Wicks (mwicks@kettering.edu)

```
\newsavebox{\pdfm@box}
\def\@pdfm@mark#1{\special{pdf:#1}}
\def\@pdfm@dest#1{%
  \Hy@SaveLastskip
  \begingroup
    \Hy@pstringdef\Hy@pstringDest{#1}%
    \def\x{XYZ}%
    \ifx\x\@pdfview
      \def\x{XYZ @xpos @ypos null}%
    \else
      \def\x{FitH}%
      \ifx\x\@pdfview
        \def\x{FitH @ypos}%
      \else
        \def\x{FitBH}%
        \ifx\x\@pdfview
          \def\x{FitBH @ypos}%
        \else
          \def\x{FitV}%
          \ifx\x\@pdfview
            \def\x{FitV @xpos}%
          \else
            \def\x{FitBV}%
            \ifx\x\@pdfview
              \def\x{FitBV @xpos}%
            \else
              \def\x{Fit}%
```

```
              \ifx\x\@pdfview
                \let\x\@pdfview
              \else
                \def\x{FitB}%
                \ifx\x\@pdfview
                  \let\x\@pdfview
                \else
                  \def\x{FitR}%
                  \ifx\x\@pdfview
                    \Hy@Warning{‘pdfview=FitR’ is not supported}%
                    \def\x{XYZ @xpos @ypos null}%
                  \else
                    \@onelevel@sanitize\@pdfview
                    \Hy@Warning{Unknown value ‘\@pdfview’ for pdfview}%
                    \def\x{XYZ @xpos @ypos null}%
                  \fi
                \fi
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
    \@pdfm@mark{dest (\Hy@pstringDest) [@thispage /\x]}%
  \endgroup
  \Hy@RestoreLastskip
}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\def\hyper@anchor#1{%
  \@pdfm@dest{#1}%
}
\def\hyper@anchorstart#1{%
  \Hy@activeanchortrue
  \@pdfm@dest{#1}%
}
\def\hyper@anchorend{%
  \Hy@activeanchorfalse
}
\def\Hy@undefinedname{UNDEFINED}
\def\hyper@linkstart#1#2{%
  \protected@edef\Hy@testname{#2}%
  \ifx\Hy@testname\@empty
    \let\Hy@testname\Hy@undefinedname
  \else
    \Hy@pstringdef\Hy@testname\Hy@testname
  \fi
  \@pdfm@mark{%
    bann <<
      /Type /Annot
      /Subtype /Link
      \Hy@setpdfborder
      /C [\csname @#1bordercolor\endcsname]
      /A <<
        /S /GoTo
        /D (\Hy@testname)
```

```
      >>
    >>
  }%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
}
\def\hyper@linkend{%
  \Hy@endcolorlink
  \@pdfm@mark{eann}%
}
\def\hyper@link#1#2#3{%
  \hyper@linkstart{#1}{#2}#3\hyper@linkend
}
\def\hyper@linkfile#1#2#3{%
  \Hy@pstringdef\Hy@pstringF{#2}%
  \Hy@pstringdef\Hy@pstringD{#3}%
  \leavevmode
  \@pdfm@mark{%
    bann <<
      /Type /Annot
      /Subtype /Link
      \Hy@setpdfborder
      /C [\@filebordercolor]
      /A <<
        /S /GoToR
        /F (\Hy@pstringF)
        /D \ifx\\#3\\[0 \@pdfstartview]\else(\Hy@pstringD)\fi\space
        \ifHy@newwindow /NewWindow true \fi
      >>
    >>%
  }%
  \Hy@colorlink\@filecolor#1\Hy@endcolorlink
  \@pdfm@mark{eann}%
}
\def\@hyper@launch run:#1\\#2#3{% filename, anchor text linkname
  \Hy@pstringdef\Hy@pstringF{#1}%
  \Hy@pstringdef\Hy@pstringP{#3}%
  \leavevmode
  \@pdfm@mark{%
    bann <<
      /Type /Annot
      /Subtype /Link
      \Hy@setpdfborder
      /C [\@filebordercolor]
      /A <<
        /S /Launch
        /F (\Hy@pstringF)
        \ifHy@newwindow /NewWindow true \fi
        \ifx\\#3\\%
        \else
          /Win << /P (\Hy@pstringP) /F (\Hy@pstringF) >>
        \fi
      >>
    >>%
  }%
  \Hy@colorlink\@filecolor#2\Hy@endcolorlink
  \@pdfm@mark{eann}%
}
```

```
\def\hyper@linkurl#1#2{%
  \Hy@pstringdef\Hy@pstringURI{#2}%
  \leavevmode
  \@pdfm@mark{%
    bann <<
      /Type /Annot
      /Subtype /Link
      \Hy@setpdfborder
      /C [\@urlbordercolor]
      /A <<
        /S /URI
        /URI (\Hy@pstringURI)
      >>
    >>%
  }%
  \Hy@colorlink\@urlcolor#1\Hy@endcolorlink
  \@pdfm@mark{eann}%
}
\def\Acrobatmenu#1#2{%
  \leavevmode
  \@pdfm@mark{%
    bann <<
      /Type /Annot
      /Subtype /Link
      /A <<
        /S /Named
        /N /#1
      >>
      \Hy@setpdfborder
      /C [\@menubordercolor]
    >>%
  }%
  \Hy@colorlink\@menucolor#2\Hy@endcolorlink
  \@pdfm@mark{eann}%
}
\ifx\@pdfproducer\relax
  \def\@pdfproducer{dvipdfm}
\fi
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \@pdfm@mark{%
    docinfo <<
      /Title (\@pdftitle)
      /Subject (\@pdfsubject)
      /Creator (\@pdfcreator)
      \ifx\@pdfcreationdate\@empty
      \else
        /CreationDate(\@pdfcreationdate) %
      \fi
      \ifx\@pdfmoddate\@empty
      \else
        /ModDate(\@pdfmoddate) %
      \fi
      /Author (\@pdfauthor)
      \ifx\@pdfproducer\relax
      \else
        /Producer (\@pdfproducer)
```

```
      \fi
      /Keywords (\@pdfkeywords)
    >>%
  }%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
}
\def\PDF@SetupDoc{%
  \edef\Hy@temp{%
    \ifHy@toolbar\else /HideToolbar true\fi
    \ifHy@menubar\else /HideMenubar true\fi
    \ifHy@windowui\else /HideWindowUI true\fi
    \ifHy@fitwindow /FitWindow true\fi
    \ifHy@centerwindow /CenterWindow true\fi
    \ifHy@displaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \Hy@pstringdef\Hy@pstringB{\@baseurl}%
  \@pdfm@mark{%
    docview <<%
      \ifx\@pdfstartview\@empty
      \else
        /OpenAction[@page\@pdfstartpage\@pdfstartview]%
      \fi
      \ifx\@baseurl\@empty
      \else
        /URI<</Base(\Hy@pstringB)>>%
      \fi
      /PageMode/\@pdfpagemode
      \ifx\Hy@temp\@empty
      \else
        /ViewerPreferences<<\Hy@temp>>%
```

```
      \fi
      \Hy@UseNameKey{PageLayout}\@pdfpagelayout
      \ifx\@pdflang\@empty
      \else
        /Lang(\@pdflang)%
      \fi
    >>%
  }%
  \ifx\@pdfpagescrop\@empty
  \else
    \@pdfm@mark{put @pages <</CropBox[\@pdfpagescrop]>>}
  \fi
}
```
⟨/dvipdfm⟩

45.6 VTeX typesetting system

Provided by MicroPress, May 1998. They require VTeX version 6.02 or newer; see http://www.micropress-inc.com/ for details.

⟨∗vtexhtml⟩
```
\RequirePackage{vtexhtml}
\newif\if@Localurl
\def\PDF@FinishDoc{}
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{!direct <base href="\@baseurl">}%
  \fi
}
\def\@urltype{url}
\def\hyper@link#1#2#3{%
  \leavevmode
  \special{!direct <a href=\hyper@quote\hyper@hash#2\hyper@quote>}%
  #3%
  \special{!direct </a>}%
}
\def\hyper@linkurl#1#2{%
  \begingroup
    \hyper@chars
    \leavevmode
    \MathBSuppress=1\relax
    \special{!direct <a href=\hyper@quote#2\hyper@quote>}%
    #1%
    \MathBSuppress=0\relax
    \special{!direct </a>}%
  \endgroup
}
\def\hyper@linkfile#1#2#3{%
  \hyper@linkurl{#1}{\Hy@linkfileprefix#2\ifx\\#3\\\else\##3\fi}%
}
\def\hyper@linkstart#1#2{%
  \def\Hy@tempa{#1}\ifx\Hy@tempa\@urltype
    \@Localurltrue
    \special{!direct <a href=\hyper@quote#2\hyper@quote>}%
  \else
    \@Localurlfalse
    \begingroup
```

```
      \hyper@chars
      \special{!aref #2}%
    \endgroup
  \fi
}
\def\hyper@linkend{%
  \if@Localurl
    \special{!endaref}%
  \else
    \special{!direct </a>}%
  \fi
}
\def\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \begingroup
    \hyper@chars
    \special{!aname #1}%
    \special{!direct <a name=\hyper@quote#1\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \special{!direct </a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@anchor#1{%
  \Hy@SaveLastskip
  \begingroup
    \let\protect=\string
    \hyper@chars
    \leavevmode
    \special{!aname #1}%
    \special{!direct <a name=\hyper@quote #1\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
  \bgroup\anchor@spot\egroup
  \special{!direct </a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@Form[#1]{\typeout{Sorry, TeXpider does not yet support FORMs}}
\def\@endForm{}
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \typeout{Sorry, TeXpider does not yet support FORM gauges}%
}
\def\@TextField[#1]#2{% parameters, label
  \typeout{Sorry, TeXpider does not yet support FORM text fields}%
  }
\def\@CheckBox[#1]#2{% parameters, label
  \typeout{Sorry, TeXpider does not yet support FORM checkboxes}%
  }
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \typeout{Sorry, TeXpider does not yet support FORM choice menus}%
}
\def\@PushButton[#1]#2{% parameters, label
  \typeout{Sorry, TeXpider does not yet support FORM pushbuttons}%
```

```
}
\def\@Reset[#1]#2{\typeout{Sorry, TeXpider does not yet support FORMs}}
\def\@Submit[#1]#2{\typeout{Sorry, TeXpider does not yet support FORMs}}
```
⟨/vtexhtml⟩

⟨∗vtex⟩

VTeX version 6.68 supports `\mediawidth` and `\mediaheight`. The `\ifx` construct is better than a `\csname`, because it avoids the definition and the hash table entry of a previous undefined macro.

```
\ifx\mediaheight\@undefined
\else
  \ifx\mediaheight\relax
  \else
    \ifHy@setpagesize
       \providecommand*{\VTeXInitMediaSize}{%
         \@ifundefined{stockwidth}{%
           \ifdim\paperheight>0pt %
             \setlength\mediaheight\paperheight
           \fi
           \ifdim\paperheight>0pt %
             \setlength\mediawidth\paperwidth
           \fi
         }{%
           \ifdim\stockheight>0pt %
             \setlength\mediaheight\stockheight
           \fi
           \ifdim\stockwidth>0pt %
             \setlength\mediawidth\stockwidth
           \fi
         }%
       }%
       \AtBeginDocument{\VTeXInitMediaSize}%
    \fi
    \Hy@DisableOption{setpagesize}%
  \fi
\fi
```

Older versions of VTeX require xyz in lower case.

```
\providecommand*\@pdfview{xyz}
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\def\CurrentBorderColor{\@linkbordercolor}
\def\hyper@anchor#1{%
  \Hy@SaveLastskip
  \begingroup
    \let\protect=\string
    \hyper@chars
    \special{!aname #1;\@pdfview}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \begingroup
    \hyper@chars
```

```
    \special{!aname #1;\@pdfview}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@urltype{url}
\def\Hy@undefinedname{UNDEFINED}
\def\hyper@linkstart#1#2{%
  \Hy@pstringdef\Hy@pstringURI{#2}%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \edef\CurrentBorderColor{\csname @#1bordercolor\endcsname}%
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\@urltype
    \special{!%
      aref <u=/Type /Action /S /URI /URI (\Hy@pstringURI)>;%
      a=<\Hy@setpdfborder /C [\CurrentBorderColor]>%
    }%
  \else
    \protected@edef\Hy@testname{#2}%
    \ifx\Hy@testname\@empty
      \let\Hy@testname\Hy@undefinedname
    \fi
    \special{!%
      aref \Hy@testname;%
      a=<\Hy@setpdfborder /C [\CurrentBorderColor]>%
    }%
  \fi
}
\def\hyper@linkend{%
  \special{!endaref}%
  \Hy@endcolorlink
}
\def\hyper@linkfile#1#2#3{%
  \leavevmode
  \special{!%
    aref <%
    \ifnum\Hy@VTeXversion>753 \ifHy@newwindow n\fi\fi
    f=#2>#3;%
    a=<\Hy@setpdfborder /C [\@filebordercolor]>%
  }%
  \Hy@colorlink\@filecolor#1\Hy@endcolorlink
  \special{!endaref}%
}
\def\hyper@linkurl#1#2{%
  \begingroup
    \Hy@pstringdef\Hy@pstringURI{#2}%
    \hyper@chars
    \leavevmode
    \special{!%
      aref <u=/Type /Action /S /URI /URI (\Hy@pstringURI)>;%
      a=<\Hy@setpdfborder /C [\@urlbordercolor]>%
    }%
    \Hy@colorlink\@urlcolor#1\Hy@endcolorlink
    \special{!endaref}%
```

```
  \endgroup
}
\def\hyper@link#1#2#3{%
  \edef\CurrentBorderColor{\csname @#1bordercolor\endcsname}%
  \leavevmode
  \protected@edef\Hy@testname{#2}%
  \ifx\Hy@testname\@empty
    \let\Hy@testname\Hy@undefinedname
  \fi
  \special{!%
    aref \Hy@testname;%
    a=<\Hy@setpdfborder /C [\CurrentBorderColor]>%
  }%
  \expandafter\Hy@colorlink\csname @#1color\endcsname#3\Hy@endcolorlink
  \special{!endaref}%
}
\def\hyper@image#1#2{%
  \hyper@linkurl{#2}{#1}%
}
\def\@hyper@launch run:#1\\#2#3{%
  \Hy@pstringdef\Hy@pstringF{#1}%
  \Hy@pstringdef\Hy@pstringP{#3}%
  \leavevmode
  \special{!aref
    <u=%
      /Type /Action
      /S /Launch
      /F (\Hy@pstringF)
      \ifHy@newwindow /NewWindow true \fi
      \ifx\\#3\\\else /Win << /F (\Hy@pstringF) /P (\Hy@pstringP) >> \fi%
    >;%
    a=<\Hy@setpdfborder /C [\@runbordercolor]>%
  }%
  \Hy@colorlink\@filecolor#2\Hy@endcolorlink
  \special{!endaref}%
}
\def\Acrobatmenu#1#2{%
  \leavevmode
  \special{!%
    aref <u=/S /Named /N /#1>;%
    a=<\Hy@setpdfborder /C [\@menubordercolor]>%
  }%
  \Hy@colorlink\@menucolor#2\Hy@endcolorlink
  \special{!endaref}%
}
```

The following code (transition effects) is made by Alex Kostin.
The code below makes sense for VTEX 7.02 or later.
Please never use `\@ifundefined{VTeXversion}{..}{..}` *globally*.

```
\ifnum\Hy@VTeXversion<702 %
\else
  \def\hyper@pagetransition{%
    \ifx\@pdfpagetransition\relax
    \else
      \ifx\@pdfpagetransition\@empty
```

Standard incantation.
1. Does an old entry have to be deleted? 2. If 1=yes, how to delete?

```
      \else
        \hvtex@parse@trans\@pdfpagetransition
      \fi
    \fi
}
```

I have to write an “honest” parser to convert raw PDF code into VTEX `\special`. (AVK)

Syntax of VTEX `\special{!trans <transition_effect>}`:

```
<transition_effect> ::= <transition_style>[,<transition_duration>]
<transition_style> ::= <Blinds_effect> | <Box_effect> |
                       <Dissolve_effect> | <Glitter_effect> |
                       <Split_effect> | <Wipe_effect>
<Blinds_effect> ::= B[<effect_dimension>]
<Box_effect> ::= X[<effect_motion>]
<Dissolve_effect> ::= D
<Glitter_effect> ::= G[<effect_direction>]
<Split_effect> ::= S[<effect_motion>][<effect_dimension>]
<Wipe_effect> ::= W[<effect_direction>]
<Replace_effect> ::= R
<effect_direction> ::= <number>
<effect_dimension> ::= H | V
<effect_motion> ::= I | O
<transition_duration> ::= <number>
```

Transition codes:

```
\def\hvtex@trans@effect@Blinds{\def\hvtex@trans@code{B}}
\def\hvtex@trans@effect@Box{\def\hvtex@trans@code{X}}
\def\hvtex@trans@effect@Dissolve{\def\hvtex@trans@code{D}}
\def\hvtex@trans@effect@Glitter{\def\hvtex@trans@code{G}}
\def\hvtex@trans@effect@Split{\def\hvtex@trans@code{S}}
\def\hvtex@trans@effect@Wipe{\def\hvtex@trans@code{W}}
\def\hvtex@trans@effect@R{\def\hvtex@trans@code{R}}
```

Optional parameters:

```
\def\hvtex@par@dimension{/Dm}
\def\hvtex@par@direction{/Di}
\def\hvtex@par@duration{/D}
\def\hvtex@par@motion{/M}
```

Tokenizer:

```
\def\hvtex@gettoken{\expandafter\hvtex@gettoken@\hvtex@buffer\@nil}
```

Notice that tokens in the input buffer must be space delimited.

```
\def\hvtex@gettoken@#1 #2\@nil{%
  \edef\hvtex@token{#1}%
  \edef\hvtex@buffer{#2}%
}
\def\hvtex@parse@trans#1{%
```

Initializing code:

```
  \let\hvtex@trans@code\@empty
  \let\hvtex@param@dimension\@empty
  \let\hvtex@param@direction\@empty
  \let\hvtex@param@duration\@empty
  \let\hvtex@param@motion\@empty
  \edef\hvtex@buffer{#1\space}%
```

First token is the PDF transition name without escape.

```
    \hvtex@gettoken
    \ifx\hvtex@token\@empty
```

Leading space(s)?

```
      \ifx\hvtex@buffer\@empty
```

The buffer is empty, nothing to do.

```
      \else
        \hvtex@gettoken
      \fi
    \fi
    \csname hvtex@trans@effect@\hvtex@token\endcsname
```

Now is time to parse optional parameters.

```
    \hvtex@trans@params
  }
```

Reentrable macro to parse optional parameters.

```
  \def\hvtex@trans@params{%
    \ifx\hvtex@buffer\@empty
    \else
      \hvtex@gettoken
      \let\hvtex@trans@par\hvtex@token
      \ifx\hvtex@buffer\@empty
      \else
        \hvtex@gettoken
        \ifx\hvtex@trans@par\hvtex@par@duration
```

/D is the effect duration in seconds. VTEX special takes it in milliseconds.

```
          \let\hvtex@param@duration\hvtex@token
        \else \ifx\hvtex@trans@par\hvtex@par@motion
```

/M can be either /I or /O

```
          \expandafter\edef\expandafter\hvtex@param@motion
            \expandafter{\expandafter\@gobble\hvtex@token}%
        \else \ifx\hvtex@trans@par\hvtex@par@dimension
```

/Dm can be either /H or /V

```
          \expandafter\edef\expandafter\hvtex@param@dimension
            \expandafter{\expandafter\@gobble\hvtex@token}%
        \else \ifx\hvtex@trans@par\hvtex@par@direction
```

Valid values for /Di are 0, 270, 315 (the Glitter effect) or 0, 90, 180, 270 (the Wipe effect).

```
          \let\hvtex@param@direction\hvtex@token
        \fi\fi\fi\fi
      \fi
    \fi
    \ifx\hvtex@buffer\@empty
      \let\next\hvtex@produce@trans
    \else
      \let\next\hvtex@trans@params
    \fi
    \next
  }
```

Merge `<transition_effect>` and issue the special when possible. Too lazy to validate optional parameters.

```
  \def\hvtex@produce@trans{%
```

```
    \let\vtex@trans@special\@empty
    \if S\hvtex@trans@code
      \edef\vtex@trans@special{\hvtex@trans@code
        \hvtex@param@dimension\hvtex@param@motion}%
    \else \if B\hvtex@trans@code
      \edef\vtex@trans@special{\hvtex@trans@code\hvtex@param@dimension}%
    \else \if X\hvtex@trans@code
      \edef\vtex@trans@special{\hvtex@trans@code\hvtex@param@motion}%
    \else \if W\hvtex@trans@code
      \edef\vtex@trans@special{\hvtex@trans@code\hvtex@param@direction}%
    \else \if D\hvtex@trans@code
      \let\vtex@trans@special\hvtex@trans@code
    \else \if R\hvtex@trans@code
      \let\vtex@trans@special\hvtex@trans@code
    \else \if G\hvtex@trans@code
      \edef\vtex@trans@special{\hvtex@trans@code\hvtex@param@direction}%
    \fi\fi\fi\fi\fi\fi\fi
    \ifx\vtex@trans@special\@empty
    \else
      \ifx\hvtex@param@duration\@empty
      \else
        \setlength{\dimen@}{\hvtex@param@duration\p@}%
```

I'm not guilty of possible overflow.

```
        \multiply\dimen@\@m
        \edef\vtex@trans@special{\vtex@trans@special,\strip@pt\dimen@}%
      \fi
```

And all the mess is just for this.

```
      \special{!trans \vtex@trans@special}%
    \fi
  }
  \def\hyper@pageduration{%
    \ifx\@pdfpageduration\relax
    \else
      \ifx\@pdfpageduration\@empty
        \special{!duration-}%
      \else
        \special{!duration \@pdfpageduration}%
      \fi
    \fi
  }
  \def\hyper@pagehidden{%
    \ifHy@useHidKey
      \special{!hidden\ifHy@pdfpagehidden +\else -\fi}%
    \fi
  }
\fi
```

Caution: In opposite to the other drivers, the argument of `\special{!onopen #1}` is a reference name. The VTeX's postscript mode will work with a version higher than 7.0x.

The command `\VTeXOS` is defined since version 7.45. Magic values encode the operating system:

1: WinTel
2: Linux
3: OS/2
4: MacOS
5: MacOS/X

```
\ifx\@pdfproducer\relax
  \def\@pdfproducer{VTeX}
  \ifnum\Hy@VTeXversion>\z@
    \count@\VTeXversion
    \divide\count@ 100
    \edef\@pdfproducer{\@pdfproducer\space v\the\count@}
    \multiply\count@ -100
    \advance\count@\VTeXversion
    \edef\@pdfproducer{%
      \@pdfproducer
      .\ifnum\count@<10 0\fi\the\count@
      \ifx\VTeXOS\@undefined\else
        \ifnum\VTeXOS>0 %
          \ifnum\VTeXOS<6 %
            \space(%
            \ifcase\VTeXOS
            \or Windows\or Linux\or OS/2\or MacOS\or MacOS/X%
            \fi
            )%
          \fi
        \fi
      \fi
      ,\space
      \ifnum\OpMode=\@ne PDF\else PS\fi
      \space backend%
      \ifx\gexmode\@undefined\else
        \ifnum\gexmode>\z@\space with GeX\fi
      \fi
    }
  \fi
\fi
```

Current `!pdfinfo` key syntax:

Key	Field	Type
a	**A**uthor	String
b	Crop**B**ox	String
c	**C**reator	String
k	**K**eywords	String
l	Page**L**ayout	PS
p	**P**ageMode	PS
r	P**r**oducer	String
s	**S**ubject	String
t	**T**itle	String
u	**U**RI	PS
v	**V**iewPreferences	PS

Note: PS objects that are dicts are in `<<<..>>>` (yuck; no choice).

```
\def\PDF@SetupDoc{%
  \ifx\@pdfpagescrop\@empty
  \else
    \special{!pdfinfo b=<\@pdfpagescrop>}%
  \fi
```

```
  \special{!onopen Page\@pdfstartpage}%
  \special{!pdfinfo p=</\@pdfpagemode>}%
  \ifx\@baseurl\@empty
  \else
    \special{!pdfinfo u=<<</Base (\@baseurl)>>>}%
  \fi
  \special{!pdfinfo v=<<<%
    \ifHy@toolbar\else /HideToolbar true\fi
    \ifHy@menubar\else /HideMenubar true\fi
    \ifHy@windowui\else /HideWindowUI true\fi
    \ifHy@fitwindow /FitWindow true\fi
    \ifHy@centerwindow /CenterWindow true\fi
    \ifHy@displaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  >>>}%
  \ifx\@pdfpagelayout\@empty
  \else
    \special{!pdfinfo l=</\@pdfpagelayout\space>}%
  \fi
}%
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \special{!pdfinfo a=<\@pdfauthor>}%
  \special{!pdfinfo t=<\@pdftitle>}%
  \special{!pdfinfo s=<\@pdfsubject>}%
  \special{!pdfinfo c=<\@pdfcreator>}%
  \ifx\@pdfproducer\relax
  \else
    \special{!pdfinfo r=<\@pdfproducer>}%
  \fi
  \special{!pdfinfo k=<\@pdfkeywords>}%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
```

```
  \Hy@DisableOption{pdfkeywords}%
}
⟨/vtex⟩
```

45.7 Fix for Adobe bug number 466320

If a destination occurs at the very begin of a page, the destination is moved to the previous page by Adobe Distiller 5. As workaround Adobe suggests:

```
/showpage {
  //showpage
  clippath stroke erasepage
} bind def
```

But unfortunately this fix generates an empty page at the end of the document. Therefore another fix is used by writing some clipped text.

```
⟨dviwindo⟩\def\literalps@out#1{\special{ps:#1}}%
⟨package⟩\providecommand*{\Hy@DistillerDestFix}{}
⟨*pdfmark | dviwindo⟩
\def\Hy@DistillerDestFix{%
  \begingroup
    \let\x\literalps@out
```

The fix has to be passed unchanged through GeX, if VTeX in PostScript mode with GeX is used.

```
    \ifnum \@ifundefined{OpMode}{0}{%
           \@ifundefined{gexmode}{0}{%
           \ifnum\gexmode>0 \OpMode\else 0\fi
           }}>1 %
      \def\x##1{%
        \immediate\special{!=##1}%
      }%
    \fi
    \x{%
      /product where{%
        pop %
        product(Distiller)search{%
          pop pop pop %
          version(.)search{%
            exch pop exch pop%
            (3011)eq{%
              gsave %
              newpath 0 0 moveto closepath clip%
              /Courier findfont 10 scalefont setfont %
              72 72 moveto(.)show %
              grestore%
            }if%
          }{pop}ifelse%
        }{pop}ifelse%
      }if%
    }%
  \endgroup
}
⟨/pdfmark | dviwindo⟩
```

45.8 Direct pdfmark support (dvipdf and pdfmark)

Drivers that load `pdfmark.def` have to provide the correct macro definitions of

`\@pdfproducer`	for document information
`\literalps@out`	PostScript output
`\headerps@out`	PostScript output that goes in the header area

and the correct definitions of the following PostScript procedures:

`H.S`	start of anchor, link or rect
`#1 H.A`	end of anchor, argument=baselineskip in pt
`#1 H.L`	end of link, argument=baselineskip in pt
`H.R`	end of rect
`H.B`	raw rect code

```
⟨*pdfmark | dvipdf⟩
\def\hyper@anchor#1{%
  \Hy@SaveLastskip
  \begingroup
    \pdfmark[\anchor@spot]{%
      pdfmark=/DEST,%
      linktype=anchor,%
      View=/\@pdfview \@pdfviewparams,%
      DestAnchor={#1}%
    }%
  \endgroup
  \Hy@RestoreLastskip
}
⟨*dvipdf⟩
\def\hyper@anchorstart#1{\Hy@activeanchortrue}
\def\hyper@anchorend{\Hy@activeanchorfalse}
\def\hyper@linkstart#1#2{%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \xdef\hyper@currentanchor{#2}%
}
\def\hyper@linkend{%
  \Hy@endcolorlink
}
⟨/dvipdf⟩
⟨*pdfmark⟩
\@ifundefined{hyper@anchorstart}{}{\endinput}
\def\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \literalps@out{H.S}%
  \xdef\hyper@currentanchor{#1}%
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \literalps@out{\strip@pt@and@otherjunk\baselineskip\space H.A}%
  \pdfmark{%
    pdfmark=/DEST,%
    linktype=anchor,%
    View=/\@pdfview \@pdfviewparams,%
    DestAnchor=\hyper@currentanchor,%
    Raw=H.B%
  }%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@linkstart#1#2{%
  \ifHy@breaklinks
```

```
  \else
    \leavevmode\hbox\bgroup
  \fi
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \literalps@out{H.S}%
  \xdef\hyper@currentanchor{#2}%
  \gdef\hyper@currentlinktype{#1}%
}
\def\hyper@linkend{%
  \literalps@out{\strip@pt@and@otherjunk\baselineskip\space H.L}%
  \edef\Hy@tempcolor{\csname @\hyper@currentlinktype bordercolor\endcsname}%
  \pdfmark{%
    pdfmark=/ANN,%
    linktype=link,%
    Subtype=/Link,%
    Dest=\hyper@currentanchor,%
    AcroHighlight=\@pdfhighlight,%
    Border=\@pdfborder,%
    BorderStyle=\@pdfborderstyle,%
    Color=\Hy@tempcolor,%
    Raw=H.B%
  }%
  \Hy@endcolorlink
  \ifHy@breaklinks
  \else
    \egroup
  \fi
}
```

⟨∗pdfmark⟩

We have to allow for `\baselineskip` having an optional stretch and shrink (you meet this in slide packages, for instance), so we need to strip off the junk. David Carlisle, of course, wrote this bit of code.

```
\begingroup
  \catcode`P=12
  \catcode`T=12
  \lowercase{\endgroup
  \gdef\rem@ptetc#1.#2PT#3!{#1\ifnum#2>\z@.#2\fi}%
}
\def\strip@pt@and@otherjunk#1{\expandafter\rem@ptetc\the#1!}
```

⟨/pdfmark⟩

`\hyper@pagetransition`

```
\def\hyper@pagetransition{%
  \ifx\@pdfpagetransition\relax
  \else
    \ifx\@pdfpagetransition\@empty
      % 1. Does an old entry have to be deleted?
      % 2. If 1=yes, how to delete?
    \else
      \pdfmark{%
        pdfmark=/PUT,%
        Raw={%
          \string{ThisPage\string}%
          <</Trans << /S /\@pdfpagetransition\space >> >>%
        }%
      }%
```

```
    \fi
  \fi
}
```

\hyper@pageduration

```
\def\hyper@pageduration{%
  \ifx\@pdfpageduration\relax
  \else
    \ifx\@pdfpageduration\@empty
      % 1. Does an old entry have to be deleted?
      % 2. If 1=yes, how to delete?
    \else
      \pdfmark{%
        pdfmark=/PUT,%
        Raw={%
          \string{ThisPage\string}%
          <</Dur \@pdfpageduration>>%
        }%
      }%
    \fi
  \fi
}
```

\hyper@pagehidden

```
\def\hyper@pagehidden{%
  \ifHy@useHidKey
    \pdfmark{%
      pdfmark=/PUT,%
      Raw={%
        \string{ThisPage\string}%
        <</Hid \ifHy@pdfpagehidden true\else false\fi>>%
      }%
    }%
  \fi
}
```

⟨/pdfmark⟩

```
\def\hyper@image#1#2{%
  \hyper@linkurl{#2}{#1}}
\def\Hy@undefinedname{UNDEFINED}
\def\hyper@link#1#2#3{%
  \edef\Hy@tempcolor{\csname @#1bordercolor\endcsname}%
  \begingroup
    \protected@edef\Hy@testname{#2}%
    \ifx\Hy@testname\@empty
      \let\Hy@testname\Hy@undefinedname
    \fi
```

⟨*dvipdf⟩

```
    \pdfmark[{#3}]{%
      pdfmark=/LNK,%
      {},%
      linktype={#1},%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      Color=\Hy@tempcolor,%
      Dest=\Hy@testname
```

```
    }%
⟨/dvipdf⟩
⟨*pdfmarkbase⟩
    \pdfmark[{#3}]{%
      Color=\Hy@tempcolor,%
      linktype={#1},%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      pdfmark=/ANN,%
      Subtype=/Link,%
      Dest=\Hy@testname
    }%
⟨/pdfmarkbase⟩
  \endgroup
}
\newtoks\pdf@docset
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \let\Hy@temp\@empty
  \ifx\@pdfcreationdate\@empty
  \else
    \def\Hy@temp{CreationDate=\@pdfcreationdate,}%
  \fi
  \ifx\@pdfmoddate\@empty
  \else
    \expandafter\def\expandafter\Hy@temp\expandafter{%
      \Hy@temp
      ModDate=\@pdfmoddate,%
    }%
  \fi
  \ifx\@pdfproducer\relax
  \else
    \expandafter\def\expandafter\Hy@temp\expandafter{%
      \Hy@temp
      Producer=\@pdfproducer,%
    }%
  \fi
  \expandafter
  \pdfmark\expandafter{%
    \Hy@temp
    pdfmark=/DOCINFO,%
    Title=\@pdftitle,%
    Subject=\@pdfsubject,%
    Creator=\@pdfcreator,%
    Author=\@pdfauthor,%
    Keywords=\@pdfkeywords
  }%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
}
```

```
\def\PDF@SetupDoc{%
  \pdfmark{%
    pdfmark=/DOCVIEW,%
    Page=\@pdfstartpage,%
    View=\@pdfstartview,%
    PageMode=/\@pdfpagemode
  }%
  \ifx\@pdfpagescrop\@empty
  \else
    \pdfmark{pdfmark=/PAGES,CropBox=\@pdfpagescrop}%
  \fi
  \edef\Hy@temp{%
    \ifHy@toolbar\else /HideToolbar true\fi
    \ifHy@menubar\else /HideMenubar true\fi
    \ifHy@windowui\else /HideWindowUI true\fi
    \ifHy@fitwindow /FitWindow true\fi
    \ifHy@centerwindow /CenterWindow true\fi
    \ifHy@displaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \Hy@pstringdef\Hy@pstringB{\@baseurl}%
  \pdfmark{%
    pdfmark=/PUT,%
    Raw={%
      \string{Catalog\string} <<
        \ifx\Hy@temp\@empty
        \else
          /ViewerPreferences<<\Hy@temp>>%
        \fi
        \Hy@UseNameKey{PageLayout}\@pdfpagelayout
        \ifx\@pdflang\@empty
        \else
          /Lang(\@pdflang)%
        \fi
        \ifx\@baseurl\@empty
        \else
          /URI << /Base (\Hy@pstringB) >>%
        \fi
```

```
      >>%
    }%
  }%
}
⟨/pdfmark | dvipdf⟩
⟨*pdfmarkbase | dvipdf⟩
```

We define a single macro, pdfmark, which uses the 'keyval' system to define the various allowable keys; these are *exactly* as listed in the pdfmark reference for Acrobat 3.0. The only addition is `pdfmark` which specifies the type of pdfmark to create (like ANN, LINK etc). The surrounding round and square brackets in the pdfmark commands are supplied, but you have to put in / characters as needed for the values.

```
\newif\ifHy@pdfmarkerror
\def\pdfmark{\@ifnextchar[{\pdfmark@}{\pdfmark@[]}}
\def\pdfmark@[#1]#2{%
  \Hy@pdfmarkerrorfalse
  \edef\@processme{\noexpand\pdf@toks={\the\pdf@defaulttoks}}%
  \@processme
  \let\pdf@type\relax
  \setkeys{PDF}{#2}%
  \ifHy@pdfmarkerror
  \else
    \ifx\pdf@type\relax
       \Hy@WarningNoLine{no pdfmark type specified in #2!!}%
       \ifx\\#1\\\relax\else\pdf@rect{#1}\fi
    \else
       \ifx\\#1\\\relax
⟨pdfmarkbase⟩  \literalps@out{[\the\pdf@toks\space\pdf@type\space pdfmark}%
⟨dvipdf⟩  \literalps@out{/ANN >>}%
       \else
         \@ifundefined{@\pdf@linktype color}{%
           \Hy@colorlink\@linkcolor
         }{%
           \expandafter\Hy@colorlink
                       \csname @\pdf@linktype color\endcsname
         }%
         \pdf@rect{#1}%
⟨pdfmarkbase⟩  \literalps@out{[\the\pdf@toks\space\pdf@type\space pdfmark}%
⟨dvipdf⟩  \literalps@out{/ANN >>}%
         \Hy@endcolorlink
       \fi
    \fi
  \fi
}
```

The complicated bit is working out the right enclosing rectangle of some piece of TEX text, needed by the /Rect key. This solution originates with Toby Thain (`tobyt@netspace.net.au`).

For the case breaklinks is enabled, I have added two hooks, the first one for package setouterhbox, it provides a hopefully better method without setting the text twice.

```
\usepackage[hyperref]{setouterhbox}
```

With the second hook, also you can set the text twice, e.g.:

```
\long\def\Hy@setouterhbox#1#2{\long\def\my@temp{#2}}
\def\Hy@breaklinksunhbox#1{\my@temp}
```

```
\newsavebox{\pdf@box}
```

```
\providecommand*{\Hy@setouterhbox}{\sbox}
\providecommand*{\Hy@breaklinksunhbox}{\unhbox}
\def\pdf@rect#1{%
⟨dvipdf⟩    \literalps@out{/ANN \pdf@type\space\the\pdf@toks\space <<}#1%
  \leavevmode
  \ifHy@breaklinks
    \Hy@setouterhbox\pdf@box{#1}%
  \else
    \sbox\pdf@box{#1}%
  \fi
  \dimen@\ht\pdf@box
  \ifdim\dp\pdf@box=\z@
    \literalps@out{H.S}%
  \else
    \lower\dp\pdf@box\hbox{\literalps@out{H.S}}%
  \fi
```

If the text has to be horizontal mode stuff then just unbox the saved box like this, which saves executing it twice, which can mess up counters etc (thanks DPC. . .).

```
  \ifHy@breaklinks
    \expandafter\Hy@breaklinksunhbox
  \else
    \expandafter\box
  \fi
  \pdf@box
```

but if it can have multiple paragraphs you'd need one of these, but in that case the measured box size would be wrong anyway.

```
\ifHy@breaklinks#1\else\box\pdf@box\fi
\ifHy@breaklinks{#1}\else\box\pdf@box\fi
```

```
  \ifdim\dimen@=\z@
    \literalps@out{H.R}%
  \else
    \raise\dimen@\hbox{\literalps@out{H.R}}%
  \fi
  \pdf@addtoksx{H.B}%
}
```

All the supplied material is stored in a token list; since I do not feel sure I quite understand these, things may not work as expected with expansion. We'll have to experiment.

```
\newtoks\pdf@toks
\newtoks\pdf@defaulttoks
\pdf@defaulttoks={}%
\def\pdf@addtoks#1#2{%
  \edef\@processme{\pdf@toks{\the\pdf@toks\space /#2 #1}}%
  \@processme
}
\def\pdf@addtoksx#1{%
  \edef\@processme{\pdf@toks{\the\pdf@toks\space #1}}%
  \@processme
}
\def\PDFdefaults#1{%
  \pdf@defaulttoks={#1}%
}
```

This is the list of allowed keys. See the Acrobat manual for an explanation.

```
% what is the type of pdfmark?
```

```
\define@key{PDF}{pdfmark}{\def\pdf@type{#1}}
% what is the link type?
\define@key{PDF}{linktype}{\def\pdf@linktype{#1}}
\def\pdf@linktype{link}
% parameter is a stream of PDF
\define@key{PDF}{Raw}{\pdf@addtoksx{#1}}
% parameter is a name
\define@key{PDF}{Action}{\pdf@addtoks{#1}{Action}}
% parameter is a array
\define@key{PDF}{Border}{%
  \edef\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
  \else
    \pdf@addtoks{[#1]}{Border}%
  \fi
}
% parameter is a dictionary
\define@key{PDF}{BorderStyle}{%
  \edef\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
  \else
    \pdf@addtoks{<<#1>>}{BS}%
  \fi
}
% parameter is a array
\define@key{PDF}{Color}{\pdf@addtoks{[#1]}{Color}}
% parameter is a string
\define@key{PDF}{Contents}{\pdf@addtoks{(#1)}{Contents}}
% parameter is a integer
\define@key{PDF}{Count}{\pdf@addtoks{#1}{Count}}
% parameter is a array
\define@key{PDF}{CropBox}{\pdf@addtoks{[#1]}{CropBox}}
% parameter is a string
\define@key{PDF}{DOSFile}{\pdf@addtoks{(#1)}{DOSFile}}
% parameter is a string or file
\define@key{PDF}{DataSource}{\pdf@addtoks{(#1)}{DataSource}}
% parameter is a destination
\define@key{PDF}{Dest}{%
  \Hy@pstringdef\Hy@pstringDest{#1}%
  \ifx\Hy@pstringDest\@empty
    \Hy@pdfmarkerrortrue
    \Hy@Warning{Destination with empty name ignored}%
  \else
    \pdf@addtoks{(\Hy@pstringDest) cvn}{Dest}%
  \fi
}
\define@key{PDF}{DestAnchor}{%
  \Hy@pstringdef\Hy@pstringDest{#1}%
  \ifx\Hy@pstringDest\@empty
    \Hy@pdfmarkerrortrue
    \Hy@Warning{Destination with empty name ignored}%
  \else
    \pdf@addtoks{(\Hy@pstringDest) cvn}{Dest}%
  \fi
}
% parameter is a string
\define@key{PDF}{Dir}{\pdf@addtoks{(#1)}{Dir}}
```

```
% parameter is a string
\define@key{PDF}{File}{\pdf@addtoks{(#1)}{File}}
% parameter is a int
\define@key{PDF}{Flags}{\pdf@addtoks{#1}{Flags}}
% parameter is a name
\define@key{PDF}{AcroHighlight}{%
  \begingroup
    \edef\x{#1}%
  \expandafter\endgroup\ifx\x\@empty
  \else
    \pdf@addtoks{#1}{H}%
  \fi
}
% parameter is a string
\define@key{PDF}{ID}{\pdf@addtoks{[#1]}{ID}}
% parameter is a string
\define@key{PDF}{MacFile}{\pdf@addtoks{(#1)}{MacFile}}
% parameter is a string
\define@key{PDF}{ModDate}{\pdf@addtoks{(#1)}{ModDate}}
% parameter is a string
\define@key{PDF}{Op}{\pdf@addtoks{(#1)}{Op}}
% parameter is a Boolean
\define@key{PDF}{Open}{\pdf@addtoks{#1}{Open}}
% parameter is a integer or name
\define@key{PDF}{Page}{\pdf@addtoks{#1}{Page}}
% parameter is a name
\define@key{PDF}{PageMode}{\pdf@addtoks{#1}{PageMode}}
% parameter is a string
\define@key{PDF}{Params}{\pdf@addtoks{(#1)}{Params}}
% parameter is a array
\define@key{PDF}{Rect}{\pdf@addtoks{[#1]}{Rect}}
% parameter is a integer
\define@key{PDF}{SrcPg}{\pdf@addtoks{#1}{SrcPg}}
% parameter is a name
⟨pdfmarkbase⟩\define@key{PDF}{Subtype}{\pdf@addtoks{#1}{Subtype}}
⟨dvipdf⟩\define@key{PDF}{Subtype}{\pdf@addtoks{#1}{}}
% parameter is a string
\define@key{PDF}{Title}{\pdf@addtoks{(#1)}{Title}}
% parameter is a string
\define@key{PDF}{Unix}{\pdf@addtoks{(#1)}{Unix}}
% parameter is a string
\define@key{PDF}{UnixFile}{\pdf@addtoks{(#1)}{UnixFile}}
% parameter is an array
\define@key{PDF}{View}{\pdf@addtoks{[#1]}{View}}
% parameter is a string
\define@key{PDF}{WinFile}{\pdf@addtoks{(#1)}{WinFile}}
```

These are the keys used in the DOCINFO section.

```
\define@key{PDF}{Author}{\pdf@addtoks{(#1)}{Author}}
\define@key{PDF}{Creator}{\pdf@addtoks{(#1)}{Creator}}
\define@key{PDF}{CreationDate}{\pdf@addtoks{(#1)}{CreationDate}}
\define@key{PDF}{ModDate}{\pdf@addtoks{(#1)}{ModDate}}
\define@key{PDF}{Producer}{\pdf@addtoks{(#1)}{Producer}}
\define@key{PDF}{Subject}{\pdf@addtoks{(#1)}{Subject}}
\define@key{PDF}{Keywords}{\pdf@addtoks{(#1)}{Keywords}}
\define@key{PDF}{ModDate}{\pdf@addtoks{(#1)}{ModDate}}
\define@key{PDF}{Base}{\pdf@addtoks{(#1)}{Base}}
\define@key{PDF}{URI}{\pdf@addtoks{#1}{URI}}
```

```
⟨/pdfmarkbase | dvipdf⟩
⟨*pdfmark | dvipdf⟩
\def\Acrobatmenu#1#2{%
  \pdfmark[{#2}]{%
    linktype=menu,%
    pdfmark=/ANN,%
    AcroHighlight=\@pdfhighlight,%
    Border=\@pdfborder,%
    BorderStyle=\@pdfborderstyle,%
    Action={<< /Subtype /Named /N /#1 >>},%
    Subtype=/Link%
  }%
}
```

And now for some useful examples:

```
\def\PDFNextPage{\@ifnextchar[{\PDFNextPage@}{\PDFNextPage@[]}}
\def\PDFNextPage@[#1]#2{%
  \pdfmark[{#2}]{%
    #1,%
    Border=\@pdfborder,%
    BorderStyle=\@pdfborderstyle,%
    Color=.2 .1 .5,
    pdfmark=/ANN,%
    Subtype=/Link,%
    Page=/Next%
  }%
}
\def\PDFPreviousPage{%
  \@ifnextchar[{\PDFPreviousPage@}{\PDFPreviousPage@[]}%
}
\def\PDFPreviousPage@[#1]#2{%
  \pdfmark[{#2}]{%
    #1,%
    Border=\@pdfborder,%
    BorderStyle=\@pdfborderstyle,%
    Color=.4 .4 .1,%
    pdfmark=/ANN,%
    Subtype=/Link,%
    Page=/Prev%
  }%
}
\def\PDFOpen#1{%
  \pdfmark{#1,pdfmark=/DOCVIEW}%
}
```

This is not as simple as it looks; if we make the argument of this macro eg `\pageref{foo}` and expect it to expand to '3', we need a special version of `\pageref` which does *not* produce '3 '.... David Carlisle looked at this bit and provided the solution, as ever!

```
\def\PDFPage{\@ifnextchar[{\PDFPage@}{\PDFPage@[]}}
\def\PDFPage@[#1]#2#3{%
  \let\pageref\simple@pageref
  \pdfmark[{#3}]{%
    #1,%
    Page={#2},%
    AcroHighlight=\@pdfhighlight,%
    Border=\@pdfborder,%
    BorderStyle=\@pdfborderstyle,%
    Color=\@pagebordercolor,%
```

```
    pdfmark=/ANN,%
    Subtype=/Link%
  }%
}
\def\simple@pageref#1{%
  \expandafter\ifx\csname r@#1\endcsname\relax
   0%
  \else
    \expandafter\expandafter\expandafter
          \@secondoffive\csname r@#1\endcsname
  \fi}
```

This will only work if you use Distiller 2.1 or higher.

```
\def\hyper@linkurl#1#2{%
  \begingroup
    \Hy@pstringdef\Hy@pstringURI{#2}%
    \hyper@chars
    \leavevmode
⟨*pdfmarkbase⟩
    \pdfmark[{#1}]{%
      pdfmark=/ANN,%
      linktype=url,%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      Color=\@urlbordercolor,%
      Action={<< /Subtype /URI /URI (\Hy@pstringURI) >>},%
      Subtype=/Link%
    }%
⟨/pdfmarkbase⟩
⟨*dvipdf⟩
    \pdfmark[{#1}]{%
      pdfmark=/LNK,%
      linktype=url,%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      Color=\@urlbordercolor,%
      Action={URI /URI <\Hy@hstringURI>}%
    }%
⟨/dvipdf⟩
  \endgroup
}
\def\hyper@linkfile#1#2#3{%
  \begingroup
    \Hy@pstringdef\Hy@pstringF{#2}%
    \Hy@pstringdef\Hy@pstringD{#3}%
    \leavevmode
⟨*pdfmark⟩
    \pdfmark[{#1}]{%
      pdfmark=/ANN,%
      Subtype=/Link,
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      linktype=file,%
      Color=\@filebordercolor,%
      Action={<<
```

```
        /S /GoToR
        \ifHy@newwindow /NewWindow true \fi
        /F (\Hy@pstringF)
        /D \ifx\\#3\\[0 \@pdfstartview]\else(\Hy@pstringD) cvn\fi
      >>}%
    }%
⟨/pdfmark⟩
⟨*dvipdf⟩
    \pdfmark[{#1}]{%
      pdfmark=/LNK,%
      linktype=file,
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      Color=\@filebordercolor,%
      Action={<<
        /S /GoToR
        \ifHy@newwindow /NewWindow true \fi
        /F (\Hy@pstringF)
        /D \ifx\\#3\\[0 \@pdfstartview]\else(\Hy@pstringD) cvn\fi
      >>}%
    }%
⟨/dvipdf⟩
  \endgroup
}
\def\@hyper@launch run:#1\\#2#3{%
  \begingroup
    \Hy@pstringdef\Hy@pstringF{#1}%
    \Hy@pstringdef\Hy@pstringP{#3}%
    \leavevmode
⟨*pdfmark⟩
    \pdfmark[{#2}]{%
      pdfmark=/ANN,%
      Subtype=/Link,%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      linktype=file,%
      Color=\@filebordercolor,%
      Action={<<
        /S /Launch
        \ifHy@newwindow /NewWindow true \fi
        /F (\Hy@pstringF)
        \ifx\\#3\\%
        \else
          /Win << /P (\Hy@pstringP) /F (\Hy@pstringF) >>
        \fi
      >>}%
    }%
⟨/pdfmark⟩
⟨*dvipdf⟩
    \pdfmark[{#2}]{%
      pdfmark=/LNK,%
      linktype=file,%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
```

```
      Color=\@filebordercolor,%
      Action={<<
        /S /GoToR
        \ifHy@newwindow /NewWindow true \fi
        /F (\Hy@pstringF)
        \ifx\\#3\\%
        \else
          /Win << /P (\Hy@pstringP) /F (\Hy@pstringF) >>
        \fi
      >>}%
    }%
⟨/dvipdf⟩
  \endgroup
}
⟨/pdfmark | dvipdf⟩
```

Unfortunately, some parts of the pdfmark PostScript code depend on vagaries of the dvi driver. We isolate here all the problems.

45.9 Rokicki's dvips

dvips thinks in 10ths of a big point, its coordinate space is resolution dependent, and its y axis starts at the top of the page. Other drivers can and will be different!

The work is done in SDict, because we add in some header definitions in a moment.

```
⟨*dvips⟩
\input{pdfmark.def}%
\ifx\@pdfproducer\relax
  \def\@pdfproducer{dvips + Distiller}
\fi
\def\literalps@out#1{\special{ps:SDict begin #1 end}}%
\def\headerps@out#1{\special{! #1}}%
\providecommand*\@pdfborder{0 0 12}
\providecommand*\@pdfborderstyle{}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfviewparams{ H.V}

\AtBeginDvi{%
  \headerps@out{%
```

Unless I am going mad, this *appears* to be the relationship between the default coordinate system (PDF), and dvips;

```
/DvipsToPDF { .01383701 div Resolution div } def
/PDFToDvips { .01383701 mul Resolution mul } def
```

the latter's coordinates are resolution dependent, but what that .01383701 is, who knows? well, almost everyone except me, I expect... And yes, Maarten Gelderman <mgelderman@econ.vu.nl> points out that its 1/72.27 (the number of points to an inch, big points to inch is 1/72). This also suggests that the code would be more understandable (and exact) if 0.013 div would be replaced by 72.27 mul, so here we go. If this isn't right, I'll revert it.

```
    /DvipsToPDF { 72.27 mul Resolution div } def
    /PDFToDvips { 72.27 div Resolution mul } def
```

The rectangle around the links starts off *exactly* the size of the box; we will to make it slightly bigger, 1 point on all sides.

```
    /HyperBorder  { 1 PDFToDvips } def
```

```
    /H.V {pdf@hoff pdf@voff null} def
    /H.B {/Rect[pdf@llx pdf@lly pdf@urx pdf@ury]} def
```

`H.S` (start of anchor, link, or rect) stores the x and y coordinates of the current point, in PDF coordinates

```
    /H.S {
      currentpoint
      HyperBorder add /pdf@lly exch def
      dup DvipsToPDF  /pdf@hoff exch def
      HyperBorder sub /pdf@llx exch def
    } def
```

The calculation of upper left y is done without raising the point in TEX, by simply adding on the current `\baselineskip` to the current y. This is usually too much, so we remove a notional 2 points.

We have to see what the current baselineskip is, and convert it to the dvips coordinate system.

Argument: baselineskip in pt. The x and y coordinates of the current point, minus the baselineskip

```
    /H.L {
      2 sub dup
      /HyperBasePt exch def
      PDFToDvips /HyperBaseDvips exch def
      currentpoint
      HyperBaseDvips sub /pdf@ury exch def
      /pdf@urx exch def
    } def
    /H.A {
      H.L
% |/pdf@voff| = the distance from the top of the page to a point
% |\baselineskip| above the current point in PDF coordinates
      currentpoint exch pop
      vsize 72 sub exch DvipsToPDF
      HyperBasePt sub % baseline skip
      sub /pdf@voff exch def
    } def
    /H.R {
      currentpoint
      HyperBorder sub /pdf@ury exch def
      HyperBorder add /pdf@urx exch def
% |/pdf@voff| = the distance from the top of the page to the current point, in
% PDF coordinates
      currentpoint exch pop vsize 72 sub
      exch DvipsToPDF sub /pdf@voff exch def
    } def
    systemdict /pdfmark known
    {
      userdict /?pdfmark systemdict /exec get put
    }{
      userdict /?pdfmark systemdict /pop get put
      userdict /pdfmark systemdict /cleartomark get put
    }
    ifelse
  }%
}
\AfterBeginDocument{%
  \ifx\special@paper\@empty\else
    \ifHy@setpagesize
```

```
      \special{papersize=\special@paper}%
    \fi
    \Hy@DisableOption{setpagesize}%
  \fi
}
⟨/dvips⟩
```

45.10 VTeX's vtexpdfmark driver

This part is derived from the dvips (many names reflect this).

The origin seems to be the same as TeX's origin, 1 in from the left and 1 in downwards from the top. The direction of the y axis is downwards, the opposite of the dvips case. Units seems to be pt or bp.

```
⟨*vtexpdfmark⟩
\input{pdfmark.def}%
\ifx\@pdfproducer\relax
  \ifnum\OpMode=\@ne
    \def\@pdfproducer{VTeX}
  \else
    \def\@pdfproducer{VTeX + Distiller}
  \fi
\fi
\def\literalps@out#1{\special{pS:#1}}%
\def\headerps@out#1{\immediate\special{pS:#1}}%
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfviewparams{ H.V}
```

```
\AtBeginDvi{%
  \headerps@out{%
    /vsize {\Hy@pageheight} def
```

The rectangle around the links starts off *exactly* the size of the box; we will to make it slightly bigger, 1 point on all sides.

```
    /HyperBorder {1} def
    /H.V {pdf@hoff pdf@voff null} def
    /H.B {/Rect[pdf@llx pdf@lly pdf@urx pdf@ury]} def
```

`H.S` (start of anchor, link, or rect) stores the x and y coordinates of the current point, in PDF coordinates: `pdf@lly` $= Y_c -$ `HyperBorder`, `pdf@hoff` $= X_c + 72$, `pdf@llx` $= X_c -$ `HyperBorder`

```
    /H.S {
      currentpoint
      HyperBorder sub
      /pdf@lly exch def
      dup 72 add /pdf@hoff exch def
      HyperBorder sub
      /pdf@llx exch def
    } def
```

The x and y coordinates of the current point, minus the `\baselineskip`: `pdf@ury` $=$ $Y_c +$ `HyperBasePt` $+$ `HyperBorder`, `pdf@urx` $= X_c +$ `HyperBorder`

```
    /H.L {
      2 sub
      /HyperBasePt exch def
      currentpoint
      HyperBasePt add HyperBorder add
```

```
      /pdf@ury exch def
      HyperBorder add
      /pdf@urx exch def
    } def
    /H.A {
      H.L
      currentpoint exch pop
      vsize 72 sub exch
      HyperBasePt add add
      /pdf@voff exch def
    } def
```

pdf@ury $= Y_c +$ HyperBorder, pdf@urx $= X_c +$ HyperBorder

```
    /H.R {
      currentpoint
      HyperBorder add
      /pdf@ury exch def
      HyperBorder add
      /pdf@urx exch def
      currentpoint exch pop vsize 72 sub add
      /pdf@voff exch def
    } def
    systemdict /pdfmark known
    {
      userdict /?pdfmark systemdict /exec get put
    }{
      userdict /?pdfmark systemdict /pop get put
      userdict /pdfmark systemdict /cleartomark get put
    }
    ifelse
  }%
}
```

⟨/vtexpdfmark⟩

45.11 Textures

At the suggestion of Jacques Distler (distler@golem.ph.utexas.edu), try to derive a suitable driver for Textures. This was initially a copy of dvips, with some guesses about Textures behaviour. Ross Moore (ross@maths.mq.edu.au) has added modifications for better compatibility, and to support use of pdfmark.

Start by defining a macro that expands to the end-of-line character. This will be used to format the appearance of PostScript code, to enhance readability, and avoid excessively long lines which might otherwise become broken to bad places.

\Hy@ps@CR The macro \Hy@ps@CR contains the end-of-line character.

```
⟨*textures⟩
\begingroup
  \obeylines %
  \gdef\Hy@ps@CR{\noexpand
  }%
\endgroup %
```

Textures has two types of \special command for inserting PostScript code directly into the dvi output. The 'postscript' way preserves TeX's idea of where on the page the \special occurred, but it wraps the contents with a save–restore pair, and adjusts the user-space coordinate system for local drawing commands. The 'rawpostscript' way simply inserts code, without regard for the location on the page.

Thus, to put arbitrary PostScript coding at a fixed location requires using *both* `\special` constructions. It works by pushing the device-space coordinates onto the operand stack, where they can be used to transform back to the correct user-space coordinates for the whole page, within a 'rawpostscript' `\special`.

```
\def\literalps@out#1{%
  \special{postscript 0 0 transform}%
  \special{rawpostscript itransform moveto\Hy@ps@CR #1}%
}%
%
```

The 'prepostscript' is a 3rd kind of `\special`, used for inserting definitions into the dictionaries, before page-building begins. These are to be available for use on all pages.

```
\def\headerps@out#1{%
  \special{%
    prepostscript TeXdict begin\Hy@ps@CR
      #1\Hy@ps@CR
    end%
  }%
}%
%
```

To correctly support the `pdfmark` method, for embedding PDF definitions with `.ps` files in a non-intrusive way, an appropriate definition needs to be made *before* the file `pdfmark.def` is read. Other parameters are best set afterwards.

```
\AtBeginDvi{%
  \headerps@out{%
    /betterpdfmark {%
      systemdict begin
        dup /BP eq
        {cleartomark gsave nulldevice []}
        {dup /EP eq
          {cleartomark cleartomark grestore}
          {cleartomark}
          ifelse
        }ifelse
      end
    }def\Hy@ps@CR
    __pdfmark__ not{/pdfmark /betterpdfmark load def}if
    systemdict /pdfmark known
    {
      userdict /?pdfmark systemdict /load get put
    }{
      userdict /?pdfmark systemdict /pop get put
    }
    ifelse
  }% end of \headerps@out
}% end of \AtBeginDvi
%
\input{pdfmark.def}%
%
\ifx\@pdfproducer\relax
  \def\@pdfproducer{Textures + Distiller}%
\fi
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfviewparams{ H.V}
```

```
%
```

These are called at the start and end of unboxed links; their job is to leave available PS variables called `pdf@llx pdf@lly pdf@urx pdf@ury`, which are the coordinates of the bounding rectangle of the link, and `pdf@hoff pdf@voff` which are the PDF page offsets. The Rect pair are called at the LL and UR corners of a box known to TEX.

```
\headerps@out{%
```

Textures lives in normal points, I think. So conversion from one coordinate system to another involves doing nothing.

```
  /vsize {\Hy@pageheight} def
  /DvipsToPDF {} def
  /PDFToDvips {} def
  /HyperBorder  { 1 PDFToDvips } def\Hy@ps@CR
  /H.V {pdf@hoff pdf@voff null} def\Hy@ps@CR
  /H.B {/Rect[pdf@llx pdf@lly pdf@urx pdf@ury]} def\Hy@ps@CR
  /H.S {
    currentpoint
    HyperBorder add /pdf@lly exch def
    dup DvipsToPDF  /pdf@hoff exch def
    HyperBorder sub /pdf@llx exch def
  } def\Hy@ps@CR
  /H.L {
    2 sub
    PDFToDvips /HyperBase exch def
    currentpoint
    HyperBase sub /pdf@ury exch def
    /pdf@urx exch def
  } def\Hy@ps@CR
  /H.A {
    H.L
    currentpoint exch pop
    vsize 72 sub exch DvipsToPDF
    HyperBase sub % baseline skip
    sub /pdf@voff exch def
  } def\Hy@ps@CR
  /H.R {
    currentpoint
    HyperBorder sub /pdf@ury exch def
    HyperBorder add /pdf@urx exch def
    currentpoint exch pop vsize 72 sub
    exch DvipsToPDF sub /pdf@voff exch def
  } def\Hy@ps@CR
}
\AfterBeginDocument{%
  \ifHy@colorlinks
    \headerps@out{/PDFBorder{/Border [0 0 0]}def}%
  \fi
}
```

Textures provides built-in support for HyperTeX specials so this part combines code from `hypertex.def` with what is established by loading `pdfmark.def`, or any other driver.

```
\expandafter\let\expandafter\keepPDF@SetupDoc
  \csname PDF@SetupDoc\endcsname
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
```

```
    \special{html:<base href="\@baseurl">}%
  \fi
  \keepPDF@SetupDoc
}
\def\hyper@anchor#1{%
  \Hy@SaveLastskip
  \begingroup
    \let\protect=\string
    \special{html:<a name=\hyper@quote #1\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \special{html:</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \begingroup
    \hyper@chars
    \special{html:<a name=\hyper@quote#1\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \special{html:</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@urltype{url}
\def\hyper@linkstart#1#2{%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\@urltype
    \special{html:<a href=\hyper@quote#2\hyper@quote>}%
  \else
    \begingroup
      \hyper@chars
      \special{html:<a href=\hyper@quote\##2\hyper@quote>}%
    \endgroup
  \fi
}
\def\hyper@linkend{%
  \special{html:</a>}%
  \Hy@endcolorlink
}
\def\hyper@linkfile#1#2#3{%
  \hyper@linkurl{#1}{\Hy@linkfileprefix#2\ifx\\#3\\\else\##3\fi}%
}
\def\hyper@linkurl#1#2{%
  \leavevmode
  \ifHy@raiselinks
    \setbox\@tempboxa=\color@hbox #1\color@endbox
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \hyper@chars
      \special{html:<a href=\hyper@quote#2\hyper@quote>}%
```

```
    }%
    \Hy@colorlink\@urlcolor#1%
    \@linkdim\ht\@tempboxa
    \advance\@linkdim by -6.5\p@
    \raise\@linkdim\hbox{\special{html:</a>}}%
    \Hy@endcolorlink
  \else
    \begingroup
      \hyper@chars
      \special{html:<a href=\hyper@quote#2\hyper@quote>}%
      \Hy@colorlink\@urlcolor#1%
      \special{html:</a>}%
      \Hy@endcolorlink
    \endgroup
  \fi
}
\def\hyper@link#1#2#3{%
  \hyper@linkurl{#3}{\##2}%
}
\def\hyper@image#1#2{%
  \begingroup
    \hyper@chars
    \special{html:<img src=\hyper@quote#1\hyper@quote>}%
  \endgroup
}
```
⟨/textures⟩

45.12 dvipsone

```
% \subsection{dvipsone driver}
% Over-ride the default setup macro in pdfmark driver to use Y\&Y
% |\special| commands.
```
⟨*dvipsone⟩
```
\providecommand*\@pdfborder{0 0 65781}
\providecommand*\@pdfborderstyle{}
\input{pdfmark.def}%
\ifx\@pdfproducer\relax
  \def\@pdfproducer{dvipsone + Distiller}
\fi
\def\literalps@out#1{\special{ps:#1}}%
\def\headerps@out#1{\special{! #1}}%
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \special{PDF: Keywords \@pdfkeywords}%
  \special{PDF: Title \@pdftitle}%
  \special{PDF: Creator \@pdfcreator}%
  \ifx\@pdfcreationdate\@empty
  \else
    \special{PDF: CreationDate \@pdfcreationdate}%
  \fi
  \ifx\@pdfmoddate\@empty
  \else
    \special{PDF: ModDate \@pdfmoddate}%
  \fi
  \special{PDF: Author \@pdfauthor}%
  \ifx\@pdfproducer\relax
  \else
```

```
    \special{PDF: Producer \@pdfproducer}%
  \fi
  \special{PDF: Subject \@pdfsubject}%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
}
\def\PDF@SetupDoc{%
  \pdfmark{%
    pdfmark=/DOCVIEW,
    Page=\@pdfstartpage,
    View=\@pdfstartview,
    PageMode=/\@pdfpagemode
  }%
  \ifx\@pdfpagescrop\@empty
  \else
    \pdfmark{pdfmark=/PAGES,CropBox=\@pdfpagescrop}%
  \fi
  \edef\Hy@temp{%
    \ifHy@toolbar\else /HideToolbar true\fi
    \ifHy@menubar\else /HideMenubar true\fi
    \ifHy@windowui\else /HideWindowUI true\fi
    \ifHy@fitwindow /FitWindow true\fi
    \ifHy@centerwindow /CenterWindow true\fi
    \ifHy@displaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \Hy@pstringdef\Hy@pstringB{\@baseurl}%
  \pdfmark{%
    pdfmark=/PUT,%
    Raw={%
      \string{Catalog\string} <<
        \ifx\Hy@temp\@empty
```

```
        \else
          /ViewerPreferences<<\Hy@temp>>%
        \fi
        \Hy@UseNameKey{PageLayout}\@pdfpagelayout
        \ifx\@pdflang\@empty
        \else
          /Lang(\@pdflang)%
        \fi
        \ifx\@baseurl\@empty
        \else
          /URI << /Base (\Hy@pstringB) >>%
        \fi
      >>%
    }%
  }%
}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfviewparams{ %
  gsave revscl currentpoint grestore
  72 add exch pop null exch null
}
```

These are called at the start and end of unboxed links; their job is to leave available PS variables called `pdf@llx pdf@lly pdf@urx pdf@ury`, which are the coordinates of the bounding rectangle of the link, and `pdf@hoff pdf@voff` which are the PDF page offsets. These latter are currently not used in the dvipsone setup. The Rect pair are called at the LL and UR corners of a box known to TEX.

```
\special{headertext=
```

dvipsone lives in scaled points; does this mean 65536 or 65781?

```
  /DvipsToPDF { 65781 div  } def
  /PDFToDvips { 65781 mul } def
  /HyperBorder  { 1 PDFToDvips } def
  /H.B {/Rect[pdf@llx pdf@lly pdf@urx pdf@ury]} def
  /H.S {
    currentpoint
    HyperBorder add /pdf@lly exch def
    dup   DvipsToPDF /pdf@hoff exch def
    HyperBorder sub /pdf@llx exch def
  } def
  /H.L {
    2 sub
    PDFToDvips /HyperBase exch def
    currentpoint
    HyperBase sub /pdf@ury exch def
    /pdf@urx exch def
  } def
  /H.A {
    H.L
    currentpoint exch pop
    HyperBase sub % baseline skip
    DvipsToPDF /pdf@voff exch def
  } def
  /H.R {
    currentpoint
    HyperBorder sub /pdf@ury exch def
    HyperBorder add /pdf@urx exch def
    currentpoint exch pop DvipsToPDF /pdf@voff exch def
```

```
  } def
  systemdict
  /pdfmark known
  {
    userdict /?pdfmark /exec load put
  }{
    userdict /?pdfmark /pop load put
    userdict /pdfmark systemdict /cleartomark get put
  }
  ifelse
}
⟨/dvipsone⟩
⟨*dvipdf⟩
\def\literalps@out#1{\special{pdf: #1}}%
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
⟨/dvipdf⟩
```

45.13 TeX4ht

```
⟨*tex4ht⟩
\@ifpackageloaded{tex4ht}
  {\typeout{hyperref tex4ht: tex4ht already loaded}}%
  {\RequirePackage[htex4ht]{tex4ht}}
\def\PDF@FinishDoc{}
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{t4ht=<base href="\@baseurl">}%
  \fi
}
\def\hyper@anchor#1{%
  \Hy@SaveLastskip
  \begingroup
    \let\protect=\string
    \special{t4ht=<a name=\hyper@quote #1\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \special{t4ht=</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \begingroup
    \hyper@chars\special{t4ht=<a name=\hyper@quote#1\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \special{t4ht=</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@urltype{url}
\def\hyper@linkstart#1#2{%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
```

```
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\@urltype
    \special{t4ht=<a href=\hyper@quote#2\hyper@quote>}%
  \else
    {\hyper@chars\special{t4ht=<a href=\hyper@quote\##2\hyper@quote>}}%
  \fi
}
\def\hyper@linkend{%
  \special{t4ht=</a>}%
  \Hy@endcolorlink
}
\def\hyper@linkfile#1#2#3{%
  \hyper@linkurl{#1}{\Hy@linkfileprefix#2\ifx\\#3\\\else\##3\fi}%
}
\def\hyper@linkurl#1#2{%
  \leavevmode
  \ifHy@raiselinks
    \setbox\@tempboxa=\color@hbox #1\color@endbox
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \begingroup
        \hyper@chars\special{t4ht=<a href=\hyper@quote#2\hyper@quote>}%
      \endgroup
    }%
    \Hy@colorlink\@urlcolor#1\Hy@endcolorlink
    \@linkdim\ht\@tempboxa
    \advance\@linkdim by -6.5\p@
    \raise\@linkdim\hbox{\special{t4ht=</a>}}%
  \else
    \begingroup
      \hyper@chars
      \special{t4ht=<a href=\hyper@quote#2\hyper@quote>}%
      \Hy@colorlink\@urlcolor#1\Hy@endcolorlink
      \special{t4ht=</a>}%
    \endgroup
  \fi
}
\def\hyper@link#1#2#3{%
  \hyper@linkurl{#3}{\##2}%
}
\def\hyper@image#1#2{%
  \begingroup
    \hyper@chars
    \special{t4ht=<img src=\hyper@quote#1\hyper@quote>}%
  \endgroup
}
\let\autoref\ref
\ifx \rEfLiNK \UnDef
  \def\rEfLiNK #1#2{#2}%
\fi
\def\backref#1{}
⟨/tex4ht⟩
⟨*tex4htcfg⟩
\IfFileExists{\jobname.cfg}{\endinput}{}
\Preamble{html}
  \begin{document}
\EndPreamble
```

```
\def\TeX{TeX}
\def\OMEGA{Omega}
\def\LaTeX{La\TeX}
\def\LaTeXe{\LaTeX2e}
\def\eTeX{e-\TeX}
\def\MF{Metafont}
\def\MP{Metapost}
⟨/tex4htcfg⟩
```

46 Driver-specific form support

46.1 pdfmarks

```
⟨*pdfmark⟩
\long\def\@Form[#1]{%
\AtBeginDvi{%
  \headerps@out{%
[ /_objdef {pdfDocEncoding}
  /type /dict
/OBJ pdfmark
[ {pdfDocEncoding}
 << /Type /Encoding
    /Differences [ 24 /breve /caron /circumflex /dotaccent
/hungarumlaut /ogonek /ring /tilde 39 /quotesingle 96 /grave 128
/bullet /dagger /daggerdbl /ellipsis /emdash /endash /florin /fraction
/guilsinglleft /guilsinglright /minus /perthousand /quotedblbase
/quotedblleft /quotedblright /quoteleft /quoteright /quotesinglbase
/trademark /fi /fl /Lslash /OE /Scaron /Ydieresis /Zcaron /dotlessi
/lslash /oe /scaron /zcaron 164 /currency 166 /brokenbar 168 /dieresis
/copyright /ordfeminine 172 /logicalnot /.notdef /registered /macron
/degree /plusminus /twosuperior /threesuperior /acute /mu 183
/periodcentered /cedilla /onesuperior /ordmasculine 188 /onequarter
/onehalf /threequarters 192 /Agrave /Aacute /Acircumflex /Atilde
/Adieresis /Aring /AE /Ccedilla /Egrave /Eacute /Ecircumflex
/Edieresis /Igrave /Iacute /Icircumflex /Idieresis /Eth /Ntilde
/Ograve /Oacute /Ocircumflex /Otilde /Odieresis /multiply /Oslash
/Ugrave /Uacute /Ucircumflex /Udieresis /Yacute /Thorn /germandbls
/agrave /aacute /acircumflex /atilde /adieresis /aring /ae /ccedilla
/egrave /eacute /ecircumflex /edieresis /igrave /iacute /icircumflex
/idieresis /eth /ntilde /ograve /oacute /ocircumflex /otilde
/odieresis /divide /oslash /ugrave /uacute /ucircumflex /udieresis
/yacute /thorn /ydieresis ]
>>
/PUT pdfmark
[ /_objdef {ZaDb}
  /type /dict
/OBJ pdfmark
[ {ZaDb}
  <<
   /Type /Font
   /Subtype /Type1
   /Name /ZaDb
   /BaseFont /ZapfDingbats
  >>
/PUT pdfmark
[ /_objdef {Helv}
  /type /dict
/OBJ pdfmark
```

```
[ {Helv}
  <<
  /Type /Font
  /Subtype /Type1
  /Name /Helv
  /BaseFont /Helvetica
  /Encoding {pdfDocEncoding}
  >>
/PUT pdfmark
[ /_objdef {aform}
  /type /dict
/OBJ pdfmark
[ /_objdef {afields}
  /type /array
/OBJ pdfmark
{
  [/BBox [0 0 100 100] /_objdef {Check} /BP pdfmark
  1 0 0 setrgbcolor /ZapfDingbats 80 selectfont 20 20 moveto (4) show
  [/EP pdfmark
  [/BBox [0 0 100 100] /_objdef {Cross} /BP pdfmark
  1 0 0 setrgbcolor /ZapfDingbats 80 selectfont 20 20 moveto (8) show
  [/EP pdfmark
  [/BBox [0 0 250 100] /_objdef {Submit} /BP pdfmark 0.6 setgray 0 0 250
  100 rectfill 1 setgray 2 2 moveto 2 98 lineto 248 98 lineto 246 96
  lineto 4 96 lineto 4 4 lineto fill 0.34 setgray 248 98 moveto 248 2
  lineto 2 2 lineto 4 4 lineto 246 4 lineto 246 96 lineto fill
  /Helvetica 76 selectfont 0 setgray 8 22.5 moveto (Submit) show
  [/EP pdfmark
  [/BBox [0 0 250 100] /_objdef {SubmitP} /BP pdfmark 0.6 setgray 0 0
  250 100 rectfill 0.34 setgray 2 2 moveto 2 98 lineto 248 98 lineto 246
  96 lineto 4 96 lineto 4 4 lineto fill 1 setgray 248 98 moveto 248 2
  lineto 2 2 lineto 4 4 lineto 246 4 lineto 246 96 lineto fill
  /Helvetica 76 selectfont 0 setgray 10 20.5 moveto (Submit) show
  [/EP pdfmark
} ?pdfmark
[ {aform}
  <<
    /Fields {afields}
    /DR << /Font << /ZaDb {ZaDb} /Helv {Helv} >> >>
    /DA (/Helv 10 Tf 0 g )
    /CO {corder}
    /NeedAppearances true
  >>
/PUT pdfmark
[ \string{Catalog\string}
  <<
    /AcroForm {aform}
  >>
/PUT pdfmark
[ /_objdef {corder} /type /array /OBJ pdfmark   % dps
}}%
 \setkeys{Form}{#1}%
}
\def\@endForm{}
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \typeout{Sorry, pdfmark drivers do not support FORM gauges}%
}
```

```
\def\@TextField[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \def\Fld@default{}%
  \let\Fld@value\@empty
  \def\Fld@width{\DefaultWidthofText}%
  \def\Fld@height{\DefaultHeightofText}%
  \ifFld@multiline
    \begingroup
      \dimen@=\DefaultHeightofText
      \dimen@=4\dimen@
      \edef\x{\endgroup
        \def\noexpand\Fld@height{\the\dimen@}%
      }%
    \x
  \fi
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
    \LayoutTextField{#2}{%
      \Hy@escapeform\PDFForm@Text
      \pdfmark[\MakeTextField{\Fld@width}{\Fld@height}]{%
        pdfmark=/ANN,Raw={\PDFForm@Text}%
      }%
    }%
  \egroup
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \def\Fld@name{#2}%
  \let\Fld@default\relax
  \let\Fld@value\relax
  \def\Fld@width{\DefaultWidthofChoiceMenu}%
  \def\Fld@height{\DefaultHeightofChoiceMenu}%
  \bgroup
    \Fld@menulength=0
    \@tempdima\z@
    \@for\@curropt:=#3\do{%
      \expandafter\Fld@checkequals\@curropt==\\%
      \Hy@StepCount\Fld@menulength
      \settowidth{\@tempdimb}{\@currDisplay}%
      \ifdim\@tempdimb>\@tempdima\@tempdima\@tempdimb\fi
    }%
    \advance\@tempdima by 15\p@
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \LayoutChoiceField{#2}{%
      \ifFld@radio
        \@@Radio{#3}%
      \else
        {%
          \ifdim\Fld@width<\@tempdima
            \ifdim\@tempdima<1cm\@tempdima1cm\fi
            \edef\Fld@width{\the\@tempdima}%
          \fi
          \def\Fld@flags{}%
```

```
          \ifFld@combo\def\Fld@flags{/Ff 917504}\fi
          \ifFld@popdown\def\Fld@flags{/Ff 131072}\fi
          \ifx\Fld@flags\@empty
            \@tempdima=\the\Fld@menulength\Fld@charsize
            \advance\@tempdima by \Fld@borderwidth bp
            \advance\@tempdima by \Fld@borderwidth bp
            \edef\Fld@height{\the\@tempdima}%
          \fi
          \@@Listbox{#3}%
        }%
      \fi
    }%
  \egroup
}
\def\@@Radio#1{%
  \Fld@listcount=0
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \Hy@StepCount\Fld@listcount
    \@currDisplay\space
    \Hy@escapeform\PDFForm@Radio
    \pdfmark[\MakeRadioField{\Fld@width}{\Fld@height}]{%
      pdfmark=/ANN,%
      Raw={\PDFForm@Radio /AP <</N <</\@currValue\space {Check}>> >>}%
    } % deliberate space between radio buttons
  }%
}
\newcount\Fld@listcount
\def\@@Listbox#1{%
  \Choice@toks={ }%
  \Fld@listcount=0
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \Hy@StepCount\Fld@listcount
    \edef\@processme{%
       \Choice@toks{\the\Choice@toks [(\@currValue) (\@currDisplay)]}%
    }\@processme
  }%
  \Hy@escapeform\PDFForm@List
  \pdfmark[\MakeChoiceField{\Fld@width}{\Fld@height}]{%
    pdfmark=/ANN,Raw={\PDFForm@List}%
  }%
}
\def\@PushButton[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \LayoutPushButtonField{%
      \Hy@escapeform\PDFForm@Push
      \pdfmark[\MakeButtonField{#2}]{%
        pdfmark=/ANN,Raw={\PDFForm@Push}%
      }%
    }%
  \egroup
}
```

```
\def\@Submit[#1]#2{%
  \Field@toks={ }%
  \def\Fld@width{\DefaultWidthofSubmit}%
  \def\Fld@height{\DefaultHeightofSubmit}%
  \bgroup
    \def\Fld@name{Submit}%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \Hy@escapeform\PDFForm@Submit
    \pdfmark[\MakeButtonField{#2}]{%
      pdfmark=/ANN,%
      Raw={\PDFForm@Submit /AP << /N {Submit} /D {SubmitP} >>}%
    }%
  \egroup
}
\def\@Reset[#1]#2{%
  \Field@toks={ }%
  \def\Fld@width{\DefaultWidthofReset}%
  \def\Fld@height{\DefaultHeightofReset}%
  \bgroup
    \def\Fld@name{Reset}%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \Hy@escapeform\PDFForm@Reset
    \pdfmark[\MakeButtonField{#2}]{%
      pdfmark=/ANN,Raw={\PDFForm@Reset}%
    }%
  \egroup
}
\def\@CheckBox[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \def\Fld@default{0}%
  \bgroup
    \def\Fld@width{\DefaultWidthofCheckBox}%
    \def\Fld@height{\DefaultHeightofCheckBox}%
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \LayoutCheckField{#2}{%
      \Hy@escapeform\PDFForm@Check
      \pdfmark[\MakeCheckField{\Fld@width}{\Fld@height}]{%
        pdfmark=/ANN,Raw={\PDFForm@Check}%
      }%
    }%
  \egroup
}
```

⟨/pdfmark⟩

46.2 dvipdf

⟨∗dvipdf⟩

```
\def\@Form[#1]{\typeout{Sorry, I do not support FORMs}}
\def\@endForm{}
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \typeout{Sorry, dvipdf does not support FORM gauges}%
}
\def\@TextField[#1]#2{% parameters, label
  \typeout{Sorry, dvipdf does not support FORM text fields}%
```

```
}
\def\@CheckBox[#1]#2{% parameters, label
  \typeout{Sorry, dvipdf does not support FORM checkboxes}%
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \typeout{Sorry, dvipdf does not support FORM choice menus}%
}
\def\@PushButton[#1]#2{% parameters, label
  \typeout{Sorry, dvipdf does not support FORM pushbuttons}%
}
\def\@Reset[#1]#2{\typeout{Sorry, dvipdf does not support FORMs}}
\def\@Submit[#1]#2{\typeout{Sorry, dvipdf does not support FORMs}}
⟨/dvipdf⟩
```

46.3 HyperTeX

```
⟨*hypertex⟩
\def\@Form[#1]{\typeout{Sorry, HyperTeX does not support FORMs}}
\def\@endForm{}
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \typeout{Sorry, HyperTeX does not support FORM gauges}%
}
\def\@TextField[#1]#2{% parameters, label
  \typeout{Sorry, HyperTeX does not support FORM text fields}%
}
\def\@CheckBox[#1]#2{% parameters, label
  \typeout{Sorry, HyperTeX does not support FORM checkboxes}%
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \typeout{Sorry, HyperTeX does not support FORM choice menus}%
}
\def\@PushButton[#1]#2{% parameters, label
  \typeout{Sorry, HyperTeX does not support FORM pushbuttons}%
}
\def\@Reset[#1]#2{\typeout{Sorry, HyperTeX does not support FORMs}}
\def\@Submit[#1]#2{\typeout{Sorry, HyperTeX does not support FORMs}}
⟨/hypertex⟩
```

46.4 TeX4ht

```
⟨*tex4ht⟩
\def\@Form[#1]{%
  \setkeys{Form}{#1}%
  \HCode{<form action="\Form@action" method="\Form@method">}%
}
\def\@endForm{\HCode{</form>}}
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \typeout{Sorry, TeX4ht does not support gauges}%
}
\def\@TextField[#1]#2{% parameters, label
  \let\Hy@reserved@a\@empty
  \def\Fld@name{#2}%
  \def\Fld@default{}%
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \HCode{<label for="\Fld@name">#2</label>}%
    \ifFld@password
      \@@PasswordField
```

```
    \else
      \@@TextField
    \fi
  \egroup
}
\def\@@PasswordField{%
  \HCode{%
    <input type="password"
     id="\Fld@name"
     name="\Fld@name"
     \ifFld@hidden type="hidden"\fi
     value="\Fld@default"
     \the\Field@toks
    >%
  }%
}
\def\@@TextField{%
  \ifFld@multiline
    \HCode{<textarea
      \ifFld@readonly readonly \fi
      id="\Fld@name"
      name="\Fld@name"
      \ifFld@hidden type="hidden"\fi
      \the\Field@toks>%
    }%
    \Fld@default
    \HCode{</textarea>}%
  \else
    \HCode{<input type="textbox"
      \ifFld@readonly readonly \fi
      id="\Fld@name"
      name="\Fld@name"
      \ifFld@hidden type="hidden"\fi
      value="\Fld@default" \the\Field@toks>
    }%
  \fi
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \def\Fld@name{#2}%
  \def\Fld@default{}%
  \let\Hy@reserved@a\relax
  \bgroup
   \expandafter\Fld@findlength#3\\%
   \Field@toks={ }%
   \setkeys{Field}{#1}%
   #2%
   \ifFld@radio
     \expandafter\@@Radio#3\\%
   \else
     \expandafter\@@Menu#3\\%
   \fi
  \egroup
}
\def\Fld@findlength#1\\{%
  \Fld@menulength=0
  \@for\@curropt:=#1\do{\Hy@StepCount\Fld@menulength}%
}
```

```
\def\@@Menu#1\\{%
  \HCode{<select size="\the\Fld@menulength"
    name="\Fld@name"  \the\Field@toks>}%
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \HCode{<option
      \ifx\@curropt\Fld@default selected \fi
      value="\@currValue">\@currDisplay</option>%
    }%
  }%
  \HCode{</select>}%
}
\def\@@Radio#1\\{%
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \HCode{<input type="radio"
      \ifx\@curropt\Fld@default checked \fi
      name="\Fld@name"
      value="\@currValue"
      \the\Field@toks>%
    }%
    \@currDisplay
  }%
}
\def\@PushButton[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \HCode{<input type="button"
      name="\Fld@name"
      value="#2"
      \the\Field@toks>%
    }%
    \HCode{</button>}%
  \egroup
}
\def\@Submit[#1]#2{%
  \HCode{<button type="submit">#2</button>}%
}
\def\@Reset[#1]#2{%
  \HCode{<button type="reset">#2</button>}%
}
\def\@CheckBox[#1]#2{% parameters, label
  \let\Hy@reserved@a\@empty
  \def\Fld@name{#2}%
  \def\Fld@default{0}%
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \HCode{<input type="checkbox"
      \ifFld@checked checked \fi
      \ifFld@disabled disabled \fi
      \ifFld@readonly readonly \fi
      name="\Fld@name"
      \ifFld@hidden type="hidden"\fi
      value="\Fld@default"
```

```
      \the\Field@toks>%
      #2%
    }%
  \egroup
}
```
⟨/tex4ht⟩

46.5 pdfTeX

⟨∗pdftex⟩
```
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \typeout{Sorry, pdftex does not support FORM gauges}%
}
\def\MakeFieldObject#1#2{\sbox0{#1}%
  \immediate\pdfxform0 %
  \expandafter\edef\csname #2Object\endcsname{%
    \the\pdflastxform\space 0 R%
  }%
% \hbox to 0pt{\hskip-\maxdimen{\pdfrefxform \the\pdflastxform}}%
}%
\def\@Form[#1]{%
  \@ifundefined{textcolor}{\let\textcolor\@gobble}{}%
  \setkeys{Form}{#1}%
  \ifnum\pdftexversion>13
    \pdfrefobj\OBJ@pdfdocencoding
    \pdfrefobj\OBJ@ZaDb
    \pdfrefobj\OBJ@Helv
    \pdfrefobj\OBJ@acroform
  \fi
  \pdfcatalog{/AcroForm \OBJ@acroform\space 0 R}%
  \MakeFieldObject{%
```
Same as `\ding{123}` of package pifont.
```
    \begingroup
      \fontfamily{pzd}%
      \fontencoding{U}%
      \fontseries{m}%
      \fontshape{n}%
      \selectfont
      \char123 %
    \endgroup
  }{Ding}%
  \MakeFieldObject{\fbox{\textcolor{yellow}{\textsf{Submit}}}}{Submit}%
  \MakeFieldObject{\fbox{\textcolor{yellow}{\textsf{SubmitP}}}}{SubmitP}%
}
\def\@endForm{}
\def\@TextField[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \def\Fld@default{}%
  \let\Fld@value\@empty
  \def\Fld@width{\DefaultWidthofText}%
  \def\Fld@height{\DefaultHeightofText}%
  \ifFld@multiline
    \begingroup
      \dimen@=\DefaultHeightofText
      \dimen@=4\dimen@
      \edef\x{\endgroup
        \def\noexpand\Fld@height{\the\dimen@}%
      }%
```

```
    \x
  \fi
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
    \LayoutTextField{#2}{%
      \Hy@escapeform\PDFForm@Text
      \pdfstartlink user {\PDFForm@Text}\relax
      \MakeTextField{\Fld@width}{\Fld@height}\pdfendlink
    }%
  \egroup
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \def\Fld@name{#2}%
  \let\Fld@default\relax
  \let\Fld@value\relax
  \def\Fld@width{\DefaultWidthofChoiceMenu}%
  \def\Fld@height{\DefaultHeightofChoiceMenu}%
  \bgroup
    \Fld@menulength=0
    \@tempdima\z@
    \@for\@curropt:=#3\do{%
      \expandafter\Fld@checkequals\@curropt==\\%
      \Hy@StepCount\Fld@menulength
      \settowidth{\@tempdimb}{\@currDisplay}%
      \ifdim\@tempdimb>\@tempdima\@tempdima\@tempdimb\fi
    }%
    \advance\@tempdima by 15\p@
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \ifx\Fld@value\relax
      \let\Fld@value\Fld@default
    \fi
    \LayoutChoiceField{#2}{%
      \ifFld@radio
        \@@Radio{#3}%
      \else
        {%
          \ifdim\Fld@width<\@tempdima
            \ifdim\@tempdima<1cm\@tempdima1cm\fi
            \edef\Fld@width{\the\@tempdima}%
          \fi
          \def\Fld@flags{}%
          \ifFld@combo\def\Fld@flags{/Ff 917504}\fi
          \ifFld@popdown\def\Fld@flags{/Ff 131072}\fi
          \ifx\Fld@flags\@empty
            \@tempdima=\the\Fld@menulength\Fld@charsize
            \advance\@tempdima by \Fld@borderwidth bp
            \advance\@tempdima by \Fld@borderwidth bp
            \edef\Fld@height{\the\@tempdima}%
          \fi
          \@@Listbox{#3}%
        }%
      \fi
```

```
    }%
  \egroup
}
\def\@@Radio#1{%
  \Fld@listcount=0
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \Hy@StepCount\Fld@listcount
    \@currDisplay\space
    \leavevmode
    \Hy@escapeform\PDFForm@Radio
    \pdfstartlink user {%
      \PDFForm@Radio
      /AP <<
        /N <<
```

Laurent.Guillope@math.univ-nantes.fr (Laurent Guillope) persuades me that this was wrong: `/\Fld@name\the\Fld@listcount`. But I leave it here to remind me that it is untested.

```
          /\@currValue\space \DingObject
        >>
      >>
    }%
    \relax
    \MakeRadioField{\Fld@width}{\Fld@height}\pdfendlink
    \space% deliberate space between radio buttons
  }%
}
\newcount\Fld@listcount
\def\@@Listbox#1{%
  \Choice@toks={ }%
  \Fld@listcount=0
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \Hy@StepCount\Fld@listcount
    \edef\@processme{%
      \Choice@toks{\the\Choice@toks [(\@currValue) (\@currDisplay)]}%
    }\@processme
  }%
  \leavevmode
  \Hy@escapeform\PDFForm@List
  \pdfstartlink user {\PDFForm@List}\relax
  \MakeChoiceField{\Fld@width}{\Fld@height}%
  \pdfendlink
}
\def\@PushButton[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \LayoutPushButtonField{%
      \leavevmode
      \Hy@escapeform\PDFForm@Push
      \pdfstartlink user {\PDFForm@Push}\relax
      \MakeButtonField{#2}%
      \pdfendlink
    }%
```

```
  \egroup
}
\def\@Submit[#1]#2{%
  \Field@toks={ }%
  \def\Fld@width{\DefaultWidthofSubmit}%
  \def\Fld@height{\DefaultHeightofSubmit}%
  \bgroup
    \def\Fld@name{Submit}%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \leavevmode
    \Hy@escapeform\PDFForm@Submit
    \pdfstartlink user {%
      \PDFForm@Submit
      /AP << /N \SubmitObject\space /D \SubmitPObject >>
    }%
    \relax
    \MakeButtonField{#2}%
    \pdfendlink
  \egroup
}
\def\@Reset[#1]#2{%
  \Field@toks={ }%
  \def\Fld@width{\DefaultWidthofReset}%
  \def\Fld@height{\DefaultHeightofReset}%
  \bgroup
    \def\Fld@name{Reset}%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \leavevmode
    \Hy@escapeform\PDFForm@Reset
    \pdfstartlink user {\PDFForm@Reset}\relax
    \MakeButtonField{#2}%
    \pdfendlink
  \egroup
}
\def\@CheckBox[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \def\Fld@default{0}%
  \bgroup
    \def\Fld@width{\DefaultWidthofCheckBox}%
    \def\Fld@height{\DefaultHeightofCheckBox}%
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \LayoutCheckField{#2}{%
      \Hy@escapeform\PDFForm@Check
      \pdfstartlink user {\PDFForm@Check}\relax
      \MakeCheckField{\Fld@width}{\Fld@height}%
      \pdfendlink
    }%
  \egroup
}
\pdfobj { << /Type /Encoding /Differences [ 24 /breve /caron
/circumflex /dotaccent /hungarumlaut /ogonek /ring /tilde 39
/quotesingle 96 /grave 128 /bullet /dagger /daggerdbl /ellipsis
/emdash /endash /florin /fraction /guilsinglleft /guilsinglright
```

```
/minus /perthousand /quotedblbase /quotedblleft /quotedblright
/quoteleft /quoteright /quotesinglbase /trademark /fi /fl /Lslash /OE
/Scaron /Ydieresis /Zcaron /dotlessi /lslash /oe /scaron /zcaron 164
/currency 166 /brokenbar 168 /dieresis /copyright /ordfeminine 172
/logicalnot /.notdef /registered /macron /degree /plusminus
/twosuperior /threesuperior /acute /mu 183 /periodcentered /cedilla
/onesuperior /ordmasculine 188 /onequarter /onehalf /threequarters 192
/Agrave /Aacute /Acircumflex /Atilde /Adieresis /Aring /AE /Ccedilla
/Egrave /Eacute /Ecircumflex /Edieresis /Igrave /Iacute /Icircumflex
/Idieresis /Eth /Ntilde /Ograve /Oacute /Ocircumflex /Otilde
/Odieresis /multiply /Oslash /Ugrave /Uacute /Ucircumflex /Udieresis
/Yacute /Thorn /germandbls /agrave /aacute /acircumflex /atilde
/adieresis /aring /ae /ccedilla /egrave /eacute /ecircumflex
/edieresis /igrave /iacute /icircumflex /idieresis /eth /ntilde
/ograve /oacute /ocircumflex /otilde /odieresis /divide /oslash
/ugrave /uacute /ucircumflex /udieresis /yacute /thorn /ydieresis ] >>
}
\edef\OBJ@pdfdocencoding{\the\pdflastobj}
\pdfobj {
  <<
   /Type /Font
   /Subtype /Type1
   /Name /ZaDb
   /BaseFont /ZapfDingbats
>>
}
\edef\OBJ@ZaDb{\the\pdflastobj}
\pdfobj {  <<
  /Type /Font
  /Subtype /Type1
  /Name /Helv
  /BaseFont /Helvetica
  /Encoding \OBJ@pdfdocencoding\space 0 R
  >>
}
\edef\OBJ@Helv{\the\pdflastobj}
\pdfobj {
  <<
    /Fields []
    /DR <<
      /Font << /ZaDb \OBJ@ZaDb\space 0 R /Helv \OBJ@Helv\space0 R >>
    >>
    /DA (/Helv 10 Tf 0 g )
    /NeedAppearances true
  >>
}
\edef\OBJ@acroform{\the\pdflastobj}
⟨/pdftex⟩
```

46.6 dvipdfm

D. P. Story adapted the pdfTEX forms part for dvipdfm, of which version 0.12.7b or higher is required because of a bug.

```
⟨*dvipdfm⟩
```

`\@Gauge`

```
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \typeout{Sorry, dvipdfm does not support FORM gauges}%
```

```
}
```

\@Form

```
\def\@Form[#1]{%
  \@ifundefined{textcolor}{\let\textcolor\@gobble}{}%
  \setkeys{Form}{#1}%
  \@pdfm@mark{obj @afields [ ]}%
  \@pdfm@mark{obj @corder [ ]}%
  \@pdfm@mark{%
    obj @aform <<
      /Fields @afields
      /DR << /Font << /ZaDb @OBJZaDb /Helv @OBJHelv >> >>
      /DA (/Helv 10 Tf 0 g )
      /CO @corder
      /NeedAppearances true
    >>%
  }%
  \@pdfm@mark{put @catalog << /AcroForm @aform >>}%
}
```

\@endForm

```
\def\@endForm{}
```

\dvipdfm@setdim \dvipdfm@setdim sets dimensions for ann using \pdfm@box.

```
\def\dvipdfm@setdim{%
  height \the\ht\pdfm@box\space
  width  \the\wd\pdfm@box\space
  depth  \the\dp\pdfm@box\space
}
```

\@TextField

```
\def\@TextField[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \def\Fld@default{}%
  \let\Fld@value\@empty
  \def\Fld@width{\DefaultWidthofText}%
  \def\Fld@height{\DefaultHeightofText}%
  \ifFld@multiline
    \begingroup
      \dimen@=\DefaultHeightofText
      \dimen@=4\dimen@
      \edef\x{\endgroup
        \def\noexpand\Fld@height{\the\dimen@}%
      }%
    \x
  \fi
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
    \setbox\pdfm@box=\hbox{%
      \MakeTextField{\Fld@width}{\Fld@height}%
    }%
    \LayoutTextField{#2}{%
      \Hy@escapeform\PDFForm@Text
      \@pdfm@mark{%
```

```
        ann @\Fld@name\space \dvipdfm@setdim << \PDFForm@Text >>%
      }%
    }%
    \unhbox\pdfm@box
    \@pdfm@mark{put @afields @\Fld@name}% record in @afields array
  \egroup
}
```

\@ChoiceMenu

```
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \def\Fld@name{#2}%
  \let\Fld@default\relax
  \let\Fld@value\relax
  \def\Fld@width{\DefaultWidthofChoiceMenu}%
  \def\Fld@height{\DefaultHeightofChoiceMenu}%
  \bgroup
    \Fld@menulength=0
    \@tempdima\z@
    \@for\@curropt:=#3\do{%
      \expandafter\Fld@checkequals\@curropt==\\%
      \Hy@StepCount\Fld@menulength
      \settowidth{\@tempdimb}{\@currDisplay}%
      \ifdim\@tempdimb>\@tempdima\@tempdima\@tempdimb\fi
    }%
    \advance\@tempdima by 15\p@
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \LayoutChoiceField{#2}{%
      \ifFld@radio
        \@@Radio{#3}%
      \else
        {%
          \ifdim\Fld@width<\@tempdima
            \ifdim\@tempdima<1cm\@tempdima1cm\fi
            \edef\Fld@width{\the\@tempdima}%
          \fi
          \def\Fld@flags{}%
          \ifFld@combo\def\Fld@flags{/Ff 917504}\fi
          \ifFld@popdown\def\Fld@flags{/Ff 131072}\fi
          \ifx\Fld@flags\@empty
            \@tempdima=\the\Fld@menulength\Fld@charsize
            \advance\@tempdima by \Fld@borderwidth bp
            \advance\@tempdima by \Fld@borderwidth bp
            \edef\Fld@height{\the\@tempdima}%
          \fi
          \@@Listbox{#3}%
        }%
      \fi
    }%
  \egroup
}
```

\@@Radio

```
\def\@@Radio#1{%
  \Fld@listcount=0
  \setbox\pdfm@box=\hbox{\MakeRadioField{\Fld@width}{\Fld@height}}%
```

```
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \Hy@StepCount\Fld@listcount
    \@currDisplay\space
    \leavevmode
    \Hy@escapeform\PDFForm@Radio
    \@pdfm@mark{%
      ann \ifnum\Fld@listcount=1 @\Fld@name\space\fi
      \dvipdfm@setdim
      <<
        \PDFForm@Radio\space
        /AP << /N << /\@currValue /null >> >>
      >>%
    }%
    \unhcopy\pdfm@box\space% deliberate space between radio buttons
    \ifnum\Fld@listcount=1\@pdfm@mark{put @afields @\Fld@name}\fi
  }%
}
```

\Fld@listcount

```
\newcount\Fld@listcount
```

\@@Listbox

```
\def\@@Listbox#1{%
  \Choice@toks={ }%
  \Fld@listcount=0
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \Hy@StepCount\Fld@listcount
    \edef\@processme{%
      \Choice@toks{\the\Choice@toks [(\@currValue) (\@currDisplay)]}%
    }\@processme
  }%
  \setbox\pdfm@box=\hbox{\MakeChoiceField{\Fld@width}{\Fld@height}}%
  \leavevmode
  \Hy@escapeform\PDFForm@List
  \@pdfm@mark{%
    ann @\Fld@name\space\dvipdfm@setdim
    << \PDFForm@List >>%
  }%
  \unhbox\pdfm@box
  \@pdfm@mark{put @afields @\Fld@name}%
}
```

\@PushButton

```
\def\@PushButton[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \bgroup
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \setbox\pdfm@box=\hbox{\MakeButtonField{#2}}%
    \LayoutPushButtonField{%
      \leavevmode
      \Hy@escapeform\PDFForm@Push
      \@pdfm@mark{%
        ann @\Fld@name\space\dvipdfm@setdim
```

```
        << \PDFForm@Push >>%
      }%
    }%
    \unhbox\pdfm@box
    \@pdfm@mark{put @afields @\Fld@name}%
  \egroup
}
```

\@Submit

```
\def\@Submit[#1]#2{%
  \Field@toks={ }%
  \def\Fld@width{\DefaultWidthofSubmit}%
  \def\Fld@height{\DefaultHeightofSubmit}%
  \bgroup
    \def\Fld@name{Submit}%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \setbox\pdfm@box=\hbox{\MakeButtonField{#2}}%
    \leavevmode
    \Hy@escapeform\PDFForm@Submit
    \@pdfm@mark{%
      ann @\Fld@name\space\dvipdfm@setdim
      << \PDFForm@Submit >>%
    }%
    \unhbox\pdfm@box%
    \@pdfm@mark{put @afields @\Fld@name}%
  \egroup
}
```

\@Reset

```
\def\@Reset[#1]#2{%
  \Field@toks={ }%
  \def\Fld@width{\DefaultWidthofReset}%
  \def\Fld@height{\DefaultHeightofReset}%
  \bgroup
    \def\Fld@name{Reset}%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \setbox\pdfm@box=\hbox{\MakeButtonField{#2}}%
    \leavevmode
    \Hy@escapeform\PDFForm@Reset
    \@pdfm@mark{%
      ann @\Fld@name\space\dvipdfm@setdim
      << \PDFForm@Reset >>%
    }%
    \unhbox\pdfm@box
    \@pdfm@mark{put @afields @\Fld@name}%
  \egroup
}
```

\@CheckBox

```
\def\@CheckBox[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \def\Fld@default{0}%
  \bgroup
    \def\Fld@width{\DefaultWidthofCheckBox}%
    \def\Fld@height{\DefaultHeightofCheckBox}%
```

```
    \Field@toks={ }%
    \setkeys{Field}{#1}%
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \setbox\pdfm@box=\hbox{\MakeCheckField{\Fld@width}{\Fld@height}}%
    \LayoutCheckField{#2}{%
      \Hy@escapeform\PDFForm@Check
      \@pdfm@mark{%
        ann @\Fld@name\space\dvipdfm@setdim
        << \PDFForm@Check >>%
      }%
      \unhbox\pdfm@box
      \@pdfm@mark{put @afields @\Fld@name}%
    }%
  \egroup
}

\@pdfm@mark{obj @OBJpdfdocencoding << /Type /Encoding /Differences [%
   24 /breve /caron /circumflex /dotaccent /hungarumlaut /ogonek /ring
      /tilde
   39 /quotesingle
   96 /grave
  128 /bullet /dagger /daggerdbl /ellipsis /emdash /endash /florin
      /fraction /guilsinglleft /guilsinglright /minus /perthousand
      /quotedblbase /quotedblleft /quotedblright /quoteleft /quoteright
      /quotesinglbase /trademark /fi /fl /Lslash /OE /Scaron /Ydieresis
      /Zcaron /dotlessi /lslash /oe /scaron /zcaron
  164 /currency
  166 /brokenbar
  168 /dieresis /copyright /ordfeminine
  172 /logicalnot /.notdef /registered /macron /degree /plusminus
      /twosuperior /threesuperior /acute /mu
  183 /periodcentered /cedilla /onesuperior /ordmasculine
  188 /onequarter /onehalf /threequarters
  192 /Agrave /Aacute /Acircumflex /Atilde /Adieresis /Aring /AE
      /Ccedilla /Egrave /Eacute /Ecircumflex /Edieresis /Igrave /Iacute
      /Icircumflex /Idieresis /Eth /Ntilde /Ograve /Oacute /Ocircumflex
      /Otilde /Odieresis /multiply /Oslash /Ugrave /Uacute /Ucircumflex
      /Udieresis /Yacute /Thorn /germandbls /agrave /aacute /acircumflex
      /atilde /adieresis /aring /ae /ccedilla /egrave /eacute
      /ecircumflex /edieresis /igrave /iacute /icircumflex /idieresis
      /eth /ntilde /ograve /oacute /ocircumflex /otilde /odieresis
      /divide /oslash /ugrave /uacute /ucircumflex /udieresis /yacute
      /thorn /ydieresis%
  ] >>
}
\@pdfm@mark{obj @OBJZaDb
  <<
    /Type /Font
    /Subtype /Type1
    /Name /ZaDb
    /BaseFont /ZapfDingbats
  >>
}
\@pdfm@mark{obj @OBJHelv
  <<
    /Type /Font
    /Subtype /Type1
    /Name /Helv
```

```
    /BaseFont /Helvetica
    /Encoding @OBJpdfdocencoding
  >>
}
⟨/dvipdfm⟩
```

46.7 Common forms part

```
⟨*pdfform⟩
```

`\Hy@escapestring`

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdfescapestring\endcsname\relax
  \let\Hy@escapestring\@firstofone
  \def\Hy@escapeform#1{%
    \ifHy@escapeform
      \def\Hy@escapestring##1{%
        \noexpand\Hy@escapestring{\noexpand##1}%
      }%
      \edef\Hy@temp{#1}%
      \expandafter\Hy@@escapeform\Hy@temp\Hy@escapestring{}\@nil
      \def\Hy@escapestring##1{%
        \@ifundefined{Hy@esc@\string##1}{%
          ##1%
          \ThisShouldNotHappen
        }{%
          \csname Hy@esc@\string##1\endcsname
        }%
      }%
    \else
      \let\Hy@escapestring\@firstofone
    \fi
  }%
  \def\Hy@@escapeform#1\Hy@escapestring#2#3\@nil{%
    \ifx\\#3\\%
    \else
      \expandafter\Hy@pstringdef\csname Hy@esc@\string#2\endcsname{#2}%
      \Hy@ReturnAfterFi{%
        \Hy@@escapeform#3\@nil
      }%
    \fi
  }%
\else
  \def\Hy@escapeform#1{%
    \ifHy@escapeform
      \let\Hy@escapestring\pdfescapestring
    \else
      \let\Hy@escapestring\@firstofone
    \fi
  }%
  \Hy@escapeform{}%
\fi
```

`\PDFForm@Check`

```
\def\PDFForm@Check{%
  /Subtype /Widget
  \ifFld@hidden /F 6 \else /F 4 \fi
```

```
  /T (\Hy@escapestring{\Fld@name})
  /Q \Fld@align\space
  /BS << /W \Fld@borderwidth\space /S /\Fld@borderstyle\space >>
  /MK <<
    /BC [\Fld@bordercolor]
    \ifx\Fld@bcolor\@empty
    \else
      /BG [\Fld@bcolor]
    \fi
    /CA (\Hy@escapestring{\Fld@cbsymbol})
  >>
  /DA (/ZaDb \strip@pt\Fld@charsize\space Tf \Fld@color\space rg)
  /FT /Btn
  /H /P
  \ifFld@checked /V /Yes \else /V /Off \fi
}
```

\PDFForm@Push

```
\def\PDFForm@Push{%
  /Subtype/Widget
  \ifFld@hidden /F 6\else /F 4\fi
  /T(\Hy@escapestring{\Fld@name})%
  /FT/Btn%
  /Ff 65540
  /H/P%
  /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
  /MK<<%
    /BC[\Fld@bordercolor]%
  >>%
  /A<</S/JavaScript/JS(\Hy@escapestring{\Fld@onclick})>>%
}
```

\Fld@additionalactions

```
\def\Fld@additionalactions{%
  /AA <<
```

K input (keystroke) format

```
    \ifx\Fld@keystroke@code\@empty
    \else
      /K<</S/JavaScript/JS(\Hy@escapestring{\Fld@keystroke@code})>>%
    \fi
```

F display format

```
    \ifx\Fld@format@code\@empty
    \else
      /F<</S/JavaScript/JS(\Hy@escapestring{\Fld@format@code})>>%
    \fi
```

V validation

```
    \ifx\Fld@validate@code\@empty
    \else
      /V<</S/JavaScript/JS(\Hy@escapestring{\Fld@validate@code})>>%
    \fi
```

C calculation

```
    \ifx\Fld@calculate@code\@empty
    \else
      /C<</S/JavaScript/JS(\Hy@escapestring{\Fld@calculate@code})>>%
    \fi
```

Fo receiving the input focus

```
    \ifx\Fld@onfocus@code\@empty
    \else
      /Fo<</S/JavaScript/JS(\Hy@escapestring{\Fld@onfocus@code})>>%
    \fi
```

Bl loosing the input focus (blurred)

```
    \ifx\Fld@onblur@code\@empty
    \else
      /Bl<</S/JavaScript/JS(\Hy@escapestring{\Fld@onblur@code})>>%
    \fi
```

D pressing the mouse button (down)

```
    \ifx\Fld@onmousedown@code\@empty
    \else
      /D<</S/JavaScript/JS(\Hy@escapestring{\Fld@onmousedown@code})>>%
    \fi
```

U releasing the mouse button (up)

```
    \ifx\Fld@onmouseup@code\@empty
    \else
      /U<</S/JavaScript/JS(\Hy@escapestring{\Fld@onmouseup@code})>>%
    \fi
```

E cursor enters the annotation's active area.

```
    \ifx\Fld@onenter@code\@empty
    \else
      /E<</S/JavaScript/JS(\Hy@escapestring{\Fld@onenter@code})>>%
    \fi
```

X cursor exits the annotation's active area.

```
    \ifx\Fld@onexit@code\@empty
    \else
      /X<</S/JavaScript/JS(\Hy@escapestring{\Fld@onexit@code})>>%
    \fi
  >>%
}
```

`\PDFForm@List`

```
\def\PDFForm@List{%
  /Subtype/Widget%
  \ifFld@hidden /F 6\else /F 4\fi
  /T(\Hy@escapestring{\Fld@name})%
  /FT/Ch%
  /Q \Fld@align
  /BS<</W \Fld@borderwidth /S/\Fld@borderstyle>>%
  /MK<<%
    /BC[\Fld@bordercolor]%
    \ifx\Fld@bcolor\@empty
    \else
      /BG[\Fld@bcolor]%
    \fi
  >>%
  /DA(/Helv \strip@pt\Fld@charsize\space Tf \Fld@color\space rg)%
  /Opt[\the\Choice@toks]%
  \ifx\Fld@default\relax
  \else
    /DV(\Hy@escapestring{\Fld@default})%
  \fi
```

```
  \ifx\Fld@value\relax
  \else
    /V(\Hy@escapestring{\Fld@value})%
  \fi
  \Fld@additionalactions
  \Fld@flags
}
```

\PDFForm@Radio

```
\def\PDFForm@Radio{%
  /Subtype/Widget%
  \ifFld@hidden /F 6\else /F 4\fi
  /T(\Hy@escapestring{\Fld@name})%
  /FT/Btn%
  /Ff 49152%
  /H/P
  /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
  /MK<<%
    /BC[\Fld@bordercolor]%
    \ifx\Fld@bcolor\@empty
    \else
      /BG[\Fld@bcolor]%
    \fi
    /CA(H)%
  >>%
  /DA(/ZaDb \strip@pt\Fld@charsize\space Tf \Fld@color\space rg)%
  \ifx\@currValue\Fld@default
    /V/\Fld@default
  \else
    /V/Off%
  \fi
  \Fld@additionalactions
}
```

\PDFForm@Text

```
\def\PDFForm@Text{%
  /Subtype/Widget%
  \ifFld@hidden /F 6\else /F 4\fi
  /T(\Hy@escapestring{\Fld@name})
  /Q \Fld@align
  /FT/Tx%
  /BS<</W \Fld@borderwidth\space /S /\Fld@borderstyle>>%
  /MK<<%
    /BC[\Fld@bordercolor]%
    \ifx\Fld@bcolor\@empty
    \else
      /BG[\Fld@bcolor]%
    \fi
  >>%
  /DA(/Helv \strip@pt\Fld@charsize\space Tf \Fld@color\space rg)%
  /DV(\Hy@escapestring{\Fld@default})%
  /V(\Hy@escapestring{\Fld@value})%
  \Fld@additionalactions
  \ifFld@multiline
    \ifFld@readonly /Ff 4097\else /Ff 4096\fi
  \else
    \ifFld@password
```

```
      \ifFld@readonly /Ff 8193\else /Ff 8192\fi
    \else
      \ifFld@readonly /Ff 1\fi
    \fi
  \fi
  \ifnum\Fld@maxlen>0/MaxLen \Fld@maxlen \fi
}
```

\PDFForm@Submit

```
\def\PDFForm@Submit{%
  /Subtype/Widget%
  \ifFld@hidden /F 6\else /F 4\fi
  /T(\Hy@escapestring{\Fld@name})%
  /FT/Btn%
  /Ff 65540%
  /H/P%
  /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
  /MK<<%
    /BC[\Fld@bordercolor]%
  >>%
  /A<<%
    /S/SubmitForm%
    /F<<%
      /FS/URL%
      /F(\Hy@escapestring{\Form@action})%
    >>%
    \ifForm@html /Flags 4\fi
  >>%
}
```

\PDFForm@Reset

```
\def\PDFForm@Reset{%
  /Subtype/Widget%
  \ifFld@hidden /F 6\else /F 4\fi
  /T(\Hy@escapestring{\Fld@name})%
  /FT/Btn%
  /H/P%
  /DA(/Helv \strip@pt\Fld@charsize\space Tf 0 0 1 rg)%
  /Ff 65540%
  /MK<<%
    /BC[\Fld@bordercolor]%
%    /CA (Clear)
%    /AC (Done)
  >>%
  /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
  /A<</S/ResetForm>>%
}
```

⟨/pdfform⟩
⟨*package⟩

47 Bookmarks in the PDF file

This was originally developed by Yannis Haralambous (it was the separate `repere.sty`); it needed the `repere` or `makebook.pl` post-processor to work properly. Now redundant, as it is done entirely in LaTeX macros.

To write out the current section title, and its rationalized number, we have to intercept the `\@sect` command, which is rather dangerous. But how else to see the information we need? We do the *same* for `\@ssect`, giving anchors to unnumbered sections. This allows things like bibliographies to get bookmarks when used with a manual `\addcontentsline`

```
\def\phantomsection{%
  \Hy@GlobalStepCount\Hy@linkcounter
  \xdef\@currentHref{section*.\the\Hy@linkcounter}%
  \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
}
```
⟨/package⟩

47.1 Bookmarks

⟨*outlines⟩

This section was written by Heiko Oberdiek; the code replaces an earlier version by David Carlisle.

The first part of bookmark code is in section 6. Further documentation is available as paper and slides of the talk, that Heiko Oberdiek has given at the EuroTeX'99 meating in Heidelberg. See `paper.pdf` and `slides.pdf` in the `doc` directory of hyperref.

```
\def\Hy@writebookmark#1#2#3#4#5{% section number, text, label, level, file
 \ifx\WriteBookmarks\relax%
 \else
  \ifnum#4>\Hy@bookmarksdepth\relax
  \else
   \@@writetorep{#1}{#2}{#3}{#4}{#5}%
  \fi
 \fi}
\def\Hy@currentbookmarklevel{0}
\def\Hy@numberline#1{#1 }
\def\@@writetorep#1#2#3#4#5{%
  \begingroup
    \edef\Hy@tempa{#5}%
    \ifx\Hy@tempa\Hy@bookmarkstype
      \edef\Hy@level{#4}%
      \ifx\Hy@levelcheck Y%
        \@tempcnta\Hy@level\relax
        \advance\@tempcnta by -1
        \ifnum\Hy@currentbookmarklevel<\@tempcnta
          \advance\@tempcnta by -\Hy@currentbookmarklevel\relax
          \advance\@tempcnta by 1
          \Hy@Warning{%
            Difference (\the\@tempcnta) between bookmark levels is %
            greater \MessageBreak than one, level fixed%
          }%
          \@tempcnta\Hy@currentbookmarklevel
          \advance\@tempcnta by 1
          \edef\Hy@level{\the\@tempcnta}%
        \fi
      \else
        \global\let\Hy@levelcheck Y%
      \fi
      \global\let\Hy@currentbookmarklevel\Hy@level
      \@tempcnta\Hy@level\relax
      \expandafter\xdef\csname Parent\Hy@level\endcsname{#3}%
      \advance\@tempcnta by -1
```

```
      \edef\Hy@tempa{#3}%
      \edef\Hy@tempb{\csname Parent\the\@tempcnta\endcsname}%
      \ifx\Hy@tempa\Hy@tempb
        \Hy@Warning{%
          The anchor of a bookmark and its parent's must not%
          \MessageBreak be the same. Added a new anchor%
        }%
        \phantomsection
      \fi
      \ifHy@bookmarksnumbered
        \let\numberline\Hy@numberline
        \let\partnumberline\Hy@numberline
        \let\chapternumberline\Hy@numberline
      \else
        \let\numberline\@gobble
        \let\partnumberline\@gobble
        \let\chapternumberline\@gobble
      \fi
      \pdfstringdef\Hy@tempa{#2}%
      \if@filesw
        \protected@write\@outlinefile{}{%
          \protect\BOOKMARK
            [\Hy@level][\@bookmarkopenstatus{\Hy@level}]{#3}%
            {\Hy@tempa}{\Hy@tempb}%
        }%
      \fi
    \fi
  \endgroup
}
```

In the call of `\BOOKMARK` the braces around `#4` are omitted, because it is not likely, that the level number contains `]`.

```
\newcommand{\currentpdfbookmark}{%
  \pdfbookmark[\Hy@currentbookmarklevel]%
}
\newcommand{\subpdfbookmark}{%
  \@tempcnta\Hy@currentbookmarklevel
  \Hy@StepCount\@tempcnta
  \expandafter\pdfbookmark\expandafter[\the\@tempcnta]%
}
\newcommand{\belowpdfbookmark}[2]{%
  \@tempcnta\Hy@currentbookmarklevel
  \Hy@StepCount\@tempcnta
  \expandafter\pdfbookmark\expandafter[\the\@tempcnta]{#1}{#2}%
  \advance\@tempcnta by -1
  \xdef\Hy@currentbookmarklevel{\the\@tempcnta}%
}
```

Tobias Oetiker rightly points out that we need a way to force a bookmark entry. So we introduce `\pdfbookmark`, with two parameters, the title, and a symbolic name. By default this is at level 1, but we can reset that with the optional first argument.

```
\renewcommand\pdfbookmark[3][0]{%
  \Hy@writebookmark{}{#2}{#3.#1}{#1}{toc}%
  \hyper@anchorstart{#3.#1}\hyper@anchorend
}
\def\BOOKMARK{\@ifnextchar[{\@BOOKMARK}{\@@BOOKMARK[1][-]}}
\def\@BOOKMARK[#1]{\@ifnextchar[{\@@BOOKMARK[#1]}{\@@BOOKMARK[#1][-]}}
```

The macros for calculating structure of outlines are derived from those by Petr Olsak used

in the texinfopdf macros.

The VTEX section was written originally by VTEX, but then amended by Denis Girou (denis.girou@idris.fr), then by by Taco Hoekwater (taco.hoekwater@wkap.nl. The problem is that VTEX, with its close integration of the PDF backend, does look at the contents of bookmarks, escaping \ and the like.

```
⟨*vtex⟩
\newcount\@serial@counter\@serial@counter=1\relax
```

\hv@pdf@char Plain octal codes doesn't work with versions below 6.50. So for early versions hex numbers have to be used. It would be possible to program this instead of the large \ifcase, but I'm too lazy to sort that out now.

```
\begingroup
  \catcode`\'=12
  \ifnum\Hy@VTeXversion<650 %
    \catcode`\"=12
    \gdef\hv@pdf@char#1#2#3{%
      \char
      \ifcase'#1#2#3
         "00\or"01\or"02\or"03\or"04\or"05\or"06\or"07%
      \or"08\or"09\or"0A\or"0B\or"0C\or"0D\or"0E\or"0F%
      \or"10\or"11\or"12\or"13\or"14\or"15\or"16\or"17%
      \or"18\or"19\or"1A\or"1B\or"1C\or"1D\or"1E\or"1F%
      \or"20\or"21\or"22\or"23\or"24\or"25\or"26\or"27%
      \or"28\or"29\or"2A\or"2B\or"2C\or"2D\or"2E\or"2F%
      \or"30\or"31\or"32\or"33\or"34\or"35\or"36\or"37%
      \or"38\or"39\or"3A\or"3B\or"3C\or"3D\or"3E\or"3F%
      \or"40\or"41\or"42\or"43\or"44\or"45\or"46\or"47%
      \or"48\or"49\or"4A\or"4B\or"4C\or"4D\or"4E\or"4F%
      \or"50\or"51\or"52\or"53\or"54\or"55\or"56\or"57%
      \or"58\or"59\or"5A\or"5B\or"5C\or"5D\or"5E\or"5F%
      \or"60\or"61\or"62\or"63\or"64\or"65\or"66\or"67%
      \or"68\or"69\or"6A\or"6B\or"6C\or"6D\or"6E\or"6F%
      \or"70\or"71\or"72\or"73\or"74\or"75\or"76\or"77%
      \or"78\or"79\or"7A\or"7B\or"7C\or"7D\or"7E\or"7F%
      \or"80\or"81\or"82\or"83\or"84\or"85\or"86\or"87%
      \or"88\or"89\or"8A\or"8B\or"8C\or"8D\or"8E\or"8F%
      \or"90\or"91\or"92\or"93\or"94\or"95\or"96\or"97%
      \or"98\or"99\or"9A\or"9B\or"9C\or"9D\or"9E\or"9F%
      \or"A0\or"A1\or"A2\or"A3\or"A4\or"A5\or"A6\or"A7%
      \or"A8\or"A9\or"AA\or"AB\or"AC\or"AD\or"AE\or"AF%
      \or"B0\or"B1\or"B2\or"B3\or"B4\or"B5\or"B6\or"B7%
      \or"B8\or"B9\or"BA\or"BB\or"BC\or"BD\or"BE\or"BF%
      \or"C0\or"C1\or"C2\or"C3\or"C4\or"C5\or"C6\or"C7%
      \or"C8\or"C9\or"CA\or"CB\or"CC\or"CD\or"CE\or"CF%
      \or"D0\or"D1\or"D2\or"D3\or"D4\or"D5\or"D6\or"D7%
      \or"D8\or"D9\or"DA\or"DB\or"DC\or"DD\or"DE\or"DF%
      \or"E0\or"E1\or"E2\or"E3\or"E4\or"E5\or"E6\or"E7%
      \or"E8\or"E9\or"EA\or"EB\or"EC\or"ED\or"EE\or"EF%
      \or"F0\or"F1\or"F2\or"F3\or"F4\or"F5\or"F6\or"F7%
      \or"F8\or"F9\or"FA\or"FB\or"FC\or"FD\or"FE\or"FF%
      \fi
    }
  \else
    \gdef\hv@pdf@char{\char'}
  \fi
\endgroup
```

\@@BOOKMARK

```
\def\@@BOOKMARK[#1][#2]#3#4#5{%
  \expandafter\edef\csname @count@#3\endcsname{\the\@serial@counter}%
  \edef\@mycount{\the\@serial@counter}%
  \Hy@StepCount\@serial@counter
  \edef\@parcount{%
    \expandafter\ifx\csname @count@#5\endcsname\relax
      0%
    \else
      \csname @count@#5\endcsname
    \fi
  }%
  \immediate\special{!outline #3;p=\@parcount,i=\@mycount,s=\ifx#2-c\else
o\fi,t=#4}%
}%
```

\ReadBookmarks

```
\def\ReadBookmarks{%
  \begingroup
    \def\0{\hv@pdf@char 0}%
    \def\1{\hv@pdf@char 1}%
    \def\2{\hv@pdf@char 2}%
    \def\3{\hv@pdf@char 3}%
    \def\({(}%
    \def\){)}%
    \def\do##1{%
      \ifnum\the\catcode`##1=\active
        \@makeother##1%
      \fi
    }%
    \dospecials
    \InputIfFileExists{\jobname.out}{}{}%
  \endgroup
  \ifx\WriteBookmarks\relax
  \else
    \if@filesw
      \newwrite\@outlinefile
      \immediate\openout\@outlinefile=\jobname.out
      \ifHy@typexml
        \immediate\write\@outlinefile{<relaxxml>\relax}%
      \fi
    \fi
  \fi
}
```

⟨/vtex⟩

⟨∗!vtex⟩

```
\def\ReadBookmarks{%
  \begingroup
    \escapechar=`\\%
    \let\escapechar\@gobble %
    \def\@@BOOKMARK [##1][##2]##3##4##5{\calc@bm@number{##5}}%
    \InputIfFileExists{\jobname.out}{}{}%
    \ifx\WriteBookmarks\relax
      \global\let\WriteBookmarks\relax
    \fi
    \def\@@BOOKMARK[##1][##2]##3##4##5{%
```

```
      \def\Hy@temp{##4}%
⟨*pdftex⟩
      \Hy@pstringdef\Hy@pstringName{##3}%
      \Hy@OutlineName{}\Hy@pstringName{%
        ##2\check@bm@number{##3}%
      }{%
        \expandafter\strip@prefix\meaning\Hy@temp
      }%
⟨/pdftex⟩
⟨*pdfmark⟩
      \Hy@pstringdef\Hy@pstringName{##3}%
      \pdfmark{%
        pdfmark=/OUT,%
        Count={##2\check@bm@number{##3}},%
        Dest={\Hy@pstringName},%
        Title=\expandafter\strip@prefix\meaning\Hy@temp
      }%
⟨/pdfmark⟩
⟨*dvipdfm⟩
      \Hy@pstringdef\Hy@pstringName{##3}%
      \@pdfm@mark{%
        outline ##1 <<
          /Title (\expandafter\strip@prefix\meaning\Hy@temp)
          /A <<
            /S /GoTo
            /D (\Hy@pstringName)
          >>
        >>
      }%
⟨/dvipdfm⟩
    }%
    {%
     \def\WriteBookmarks{0}%
     \InputIfFileExists{\jobname.out}{}{}%
    }%
    %{\escapechar\m@ne\InputIfFileExists{\jobname.out}{}{}}%
    \ifx\WriteBookmarks\relax
    \else
      \if@filesw
        \newwrite\@outlinefile
        \immediate\openout\@outlinefile=\jobname.out
        \ifHy@typexml
          \immediate\write\@outlinefile{<relaxxml>\relax}%
        \fi
      \fi
    \fi
    \endgroup
}
⟨*pdftex⟩
\def\Hy@OutlineName#1#2#3#4{%
  \pdfoutline goto name{#2}count#3{#4}%
}
⟨/pdftex⟩
\def\check@bm@number#1{%
  \expandafter\ifx\csname B_#1\endcsname\relax
    0%
  \else
```

```
    \csname B_#1\endcsname
  \fi
}
\def\calc@bm@number#1{%
  \@tempcnta=\check@bm@number{#1}\relax
  \advance\@tempcnta by1
  \expandafter\xdef\csname B_#1\endcsname{\the\@tempcnta}%
}
```
⟨/!vtex⟩

This code is added, so that option 'pdfpagenumbers' works with option 'implicit' (suggestion of Sebastian Rahtz).

```
\ifHy@implicit
\else
  \def\@begindvi{%
    \unvbox\@begindvibox
    \HyPL@EveryPage
    \global\let\@begindvi\HyPL@EveryPage
  }%
  \expandafter\endinput
\fi
```
⟨/outlines⟩
⟨∗outlines | hypertex⟩
```
\let\H@old@ssect\@ssect
\def\@ssect#1#2#3#4#5{%
  \H@old@ssect{#1}{#2}{#3}{#4}{#5}%
  \phantomsection
}
\let\H@old@schapter\@schapter
\def\@schapter#1{%
  \H@old@schapter{#1}%
  \begingroup
    \let\@mkboth\@gobbletwo
    \Hy@GlobalStepCount\Hy@linkcounter
    \xdef\@currentHref{\Hy@chapapp*.\the\Hy@linkcounter}%
    \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
  \endgroup
}
```

If there is no chapter number (`\frontmatter` or `\backmatter`) then `\refstepcounter{chapter}` is not executed, so there will be no destination for `\ddcontentsline`. So `\@chapter` is overloaded to avoid this:

```
\@ifundefined{@chapter}{}{%
  \let\Hy@org@chapter\@chapter
  \def\@chapter{%
    \def\Hy@next{%
      \Hy@GlobalStepCount\Hy@linkcounter
      \xdef\@currentHref{\Hy@chapapp*.\the\Hy@linkcounter}%
      \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
    }%
    \ifnum\c@secnumdepth>\m@ne
      \@ifundefined{if@mainmatter}%
      \iftrue{\csname if@mainmatter\endcsname}%
        \let\Hy@next\relax
      \fi
    \fi
    \Hy@next
```

```
    \Hy@org@chapter
  }%
}
\let\H@old@part\@part
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname chapter\endcsname\relax
  \let\Hy@secnum@part\z@
\else
  \let\Hy@secnum@part\m@ne
\fi
\def\@part{%
  \ifnum\Hy@secnum@part>\c@secnumdepth
    \phantomsection
  \fi
  \H@old@part
}
\let\H@old@spart\@spart
\def\@spart#1{%
  \H@old@spart{#1}%
  \Hy@GlobalStepCount\Hy@linkcounter
  \xdef\@currentHref{part*.\the\Hy@linkcounter}%
  \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
}
\let\H@old@sect\@sect
\def\@sect#1#2#3#4#5#6[#7]#8{%
  \ifnum #2>\c@secnumdepth
    \Hy@GlobalStepCount\Hy@linkcounter
    \xdef\@currentHref{section*.\the\Hy@linkcounter}%
  \fi
  \H@old@sect{#1}{#2}{#3}{#4}{#5}{#6}[{#7}]{#8}%
  \ifnum #2>\c@secnumdepth
    \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
  \fi
}
```

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⟨*outlines⟩

```
\expandafter\def\csname Parent-4\endcsname{}
\expandafter\def\csname Parent-3\endcsname{}
\expandafter\def\csname Parent-2\endcsname{}
\expandafter\def\csname Parent-1\endcsname{}
\expandafter\def\csname Parent0\endcsname{}
\expandafter\def\csname Parent1\endcsname{}
\expandafter\def\csname Parent2\endcsname{}
\expandafter\def\csname Parent3\endcsname{}
\expandafter\def\csname Parent4\endcsname{}
```

⟨/outlines⟩

48 Compatibility with koma-script classes

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Hard-wire in an unpleasant over-ride of komascript 'scrbook' class for `Tobias.Isenberg@gmx.de`. With version 6.71b the hack is also applied to 'scrreprt' class and is removed for koma-script versions since 2001/01/01, because Markus Kohm supports hyperref in komascript.

```
\def\Hy@tempa{%
```

```
  \def\@addchap[##1]##2{%
    \typeout{##2}%
    \if@twoside
      \@mkboth{##1}{}%
    \else
      \@mkboth{}{##1}%
    \fi
    \addtocontents{lof}{\protect\addvspace{10\p@}}%
    \addtocontents{lot}{\protect\addvspace{10\p@}}%
    \Hy@GlobalStepCount\Hy@linkcounter
    \xdef\@currentHref{\Hy@chapapp*.\the\Hy@linkcounter}%
    \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
    \if@twocolumn
       \@topnewpage[\@makeschapterhead{##2}]%
    \else
       \@makeschapterhead{##2}%
       \@afterheading
    \fi
    \addcontentsline{toc}{chapter}{##1}%
  }%
}
\@ifclassloaded{scrbook}{%
  \@ifclasslater{scrbook}{2001/01/01}{%
    \let\Hy@tempa\@empty
  }{}%
}{%
  \@ifclassloaded{scrreprt}{%
    \@ifclasslater{scrreprt}{2001/01/01}{%
      \let\Hy@tempa\@empty
    }{}%
  }{%
    \let\Hy@tempa\@empty
  }%
}%
\Hy@tempa
⟨/outlines | hypertex⟩
```

49 Encoding definition files for encodings of PDF strings

This was contributed by Heiko Oberdiek `oberdiek@ruf.uni-freiburg.de`

49.1 PD1 encoding

```
⟨*pd1enc⟩
\DeclareFontEncoding{PD1}{}{}
```

Special white space escape characters not for use in bookmarks but for other PDF strings.

```
\DeclareTextCommand{\textLF}{PD1}{\012} % line feed
\DeclareTextCommand{\textCR}{PD1}{\015} % carriage return
\DeclareTextCommand{\textHT}{PD1}{\011} % horizontal tab
\DeclareTextCommand{\textBS}{PD1}{\010} % backspace
\DeclareTextCommand{\textFF}{PD1}{\014} % formfeed
```

Accents

```
\DeclareTextAccent{\‘}{PD1}{\textgrave}
\DeclareTextAccent{\’}{PD1}{\textacute}
\DeclareTextAccent{\^}{PD1}{\textcircumflex}
\DeclareTextAccent{\~}{PD1}{\texttilde}
```

```
\DeclareTextAccent{\"}{PD1}{\textdieresis}
\DeclareTextAccent{\r}{PD1}{\textring}
\DeclareTextAccent{\v}{PD1}{\textcaron}
\DeclareTextAccent{\.}{PD1}{\textdotaccent}
\DeclareTextAccent{\c}{PD1}{\textcedilla}
\DeclareTextCompositeCommand{\‘}{PD1}{\@empty}{\textgrave}
\DeclareTextCompositeCommand{\’}{PD1}{\@empty}{\textacute}
\DeclareTextCompositeCommand{\^}{PD1}{\@empty}{\textcircumflex}
\DeclareTextCompositeCommand{\~}{PD1}{\@empty}{\texttilde}
\DeclareTextCompositeCommand{\"}{PD1}{\@empty}{\textdieresis}
\DeclareTextCompositeCommand{\r}{PD1}{\@empty}{\textring}
\DeclareTextCompositeCommand{\v}{PD1}{\@empty}{\textcaron}
\DeclareTextCompositeCommand{\.}{PD1}{\@empty}{\textdotaccent}
\DeclareTextCompositeCommand{\c}{PD1}{\@empty}{\textcedilla}
\DeclareTextCommand{\k}{PD1}[1]{\TextSymbolUnavailable{\k{#1}}#1}
```

Accent glyph names

```
\DeclareTextCommand{\textbreve}{PD1}{\030} % breve
\DeclareTextCommand{\textcaron}{PD1}{\031} % caron
\DeclareTextCommand{\textcircumflex}{PD1}{\032} % circumflex
\DeclareTextCommand{\textdotaccent}{PD1}{\033} % dotaccent
\DeclareTextCommand{\texthungarumlaut}{PD1}{\034} % hungarumlaut
\DeclareTextCommand{\textogonek}{PD1}{\035} % ogonek
\DeclareTextCommand{\textring}{PD1}{\036} % ring
\DeclareTextCommand{\texttilde}{PD1}{\037} % tilde
```

\040: space
\041: exclam

```
\DeclareTextCommand{\textquotedbl}{PD1}{\string"} % quotedbl \042
\DeclareTextCommand{\textnumbersign}{PD1}{\043} % numbersign
\DeclareTextCommand{\textdollar}{PD1}{\044} % dollar
\DeclareTextCommand{\textpercent}{PD1}{\045} % percent
\DeclareTextCommand{\textampersand}{PD1}{\046} % ampersand
```

\047: quotesingle

```
\DeclareTextCommand{\textparenleft}{PD1}{\string\(} % parenleft \050
\DeclareTextCommand{\textparenright}{PD1}{\string\)} % parenright \051
```

\052: asterisk
\053: plus
\054: comma
\055: hyphen
\056: period
\057: slash
\060…\071: 0…9
\072: colon
\073: semicolon

```
\DeclareTextCommand{\textless}{PD1}{<} % less \074
```

\075: equal

```
\DeclareTextCommand{\textgreater}{PD1}{>} % greater \076
```

\077: question
\100: at
\101…\132: A…Z
\133: bracketleft

```
\DeclareTextCommand{\textbackslash}{PD1}{\134} % backslash
```

\135: bracketright

```
\DeclareTextCommand{\textasciicircum}{PD1}{\136} % asciicircum
\DeclareTextCommand{\textunderscore}{PD1}{\137} % underscore
```

```
\DeclareTextCommand{\textgrave}{PD1}{\140} % grave
```

\141...\172: a...z

```
\DeclareTextCompositeCommand{\.}{PD1}{i}{i} % i
\DeclareTextCommand{\textbraceleft}{PD1}{\173} % braceleft
\DeclareTextCommand{\textbar}{PD1}{|} % bar
\DeclareTextCommand{\textbraceright}{PD1}{\175} % braceright
\DeclareTextCommand{\textasciitilde}{PD1}{\176} % asciitilde
```

No glyph \177 in PDFDocEncoding.

```
\DeclareTextCommand{\textbullet}{PD1}{\200} % bullet
\DeclareTextCommand{\textdagger}{PD1}{\201} % dagger
\DeclareTextCommand{\textdaggerdbl}{PD1}{\202} % daggerdbl
\DeclareTextCommand{\textellipsis}{PD1}{\203} % ellipsis
\DeclareTextCommand{\textemdash}{PD1}{\204} % emdash
\DeclareTextCommand{\textendash}{PD1}{\205} % endash
\DeclareTextCommand{\textflorin}{PD1}{\206} % florin
\DeclareTextCommand{\textfractionmark}{PD1}{/} % fraction, \207
\DeclareTextCommand{\guilsinglleft}{PD1}{\210} % guilsinglleft
\DeclareTextCommand{\guilsinglright}{PD1}{\211} % guilsinglright
\DeclareTextCommand{\textminus}{PD1}{-} % minus, \212
\DeclareTextCommand{\textperthousand}{PD1}{\213} % perthousand
\DeclareTextCommand{\quotedblbase}{PD1}{\214} % quotedblbase
\DeclareTextCommand{\textquotedblleft}{PD1}{\215} % quotedblleft
\DeclareTextCommand{\textquotedblright}{PD1}{\216} % quotedblright
\DeclareTextCommand{\textquoteleft}{PD1}{\217} % quoteleft
\DeclareTextCommand{\textquoteright}{PD1}{\220} % quoteright
\DeclareTextCommand{\quotesinglbase}{PD1}{\221} % quotesinglbase
\DeclareTextCommand{\texttrademark}{PD1}{\222} % trademark
\DeclareTextCommand{\textfi}{PD1}{fi} % fi ?? \223
\DeclareTextCommand{\textfl}{PD1}{fl} % fl ?? \224
\DeclareTextCommand{\L}{PD1}{L} % Lslash, \225
\DeclareTextCommand{\OE}{PD1}{\226} % OE
\DeclareTextCompositeCommand{\v}{PD1}{S}{\227} % Scaron
\DeclareTextCompositeCommand{\"}{PD1}{Y}{\230} % Ydieresis
\DeclareTextCommand{\IJ}{PD1}{\230}
\DeclareTextCompositeCommand{\v}{PD1}{Z}{Z} % Zcaron, \231
\DeclareTextCommand{\i}{PD1}{i} % dotlessi, \232
\DeclareTextCommand{\l}{PD1}{l} % lslash, \233
\DeclareTextCommand{\oe}{PD1}{\234} % oe
\DeclareTextCompositeCommand{\v}{PD1}{s}{\235} % scaron
\DeclareTextCompositeCommand{\v}{PD1}{z}{z} % zcaron, 236
```

No glyph \237 in PDFDocEncoding.

The euro \240 is inserted in version 1.3 of the pdf specification.

```
\DeclareTextCommand{\texteuro}{PD1}{\240} % Euro
\DeclareTextCommand{\textexclamdown}{PD1}{\241} % exclamdown
\DeclareTextCommand{\textcent}{PD1}{\242} % cent
\DeclareTextCommand{\textsterling}{PD1}{\243} % sterling
\DeclareTextCommand{\textcurrency}{PD1}{\244} % currency
\DeclareTextCommand{\textyen}{PD1}{\245} % yen
\DeclareTextCommand{\textbrokenbar}{PD1}{\246} % brokenbar
\DeclareTextCommand{\textsection}{PD1}{\247} % section
\DeclareTextCommand{\textdieresis}{PD1}{\250} % dieresis
\DeclareTextCommand{\textcopyright}{PD1}{\251} % copyright
\DeclareTextCommand{\textordfeminine}{PD1}{\252} % ordfeminine
\DeclareTextCommand{\guillemotleft}{PD1}{\253} % guillemotleft
\DeclareTextCommand{\textlogicalnot}{PD1}{\254} % logicalnot
```

No glyph \255 in PDFDocEncoding.

```
\DeclareTextCommand{\textregistered}{PD1}{\256} % registered
\DeclareTextCommand{\textmacron}{PD1}{\257} % macron
\DeclareTextCommand{\textdegree}{PD1}{\260} % degree
\DeclareTextCommand{\textplusminus}{PD1}{\261} % plusminus
\DeclareTextCommand{\texttwosuperior}{PD1}{\262} % twosuperior
\DeclareTextCommand{\textthreesuperior}{PD1}{\263} % threesuperior
\DeclareTextCommand{\textacute}{PD1}{\264} % acute
\DeclareTextCommand{\textmu}{PD1}{\265} % mu
\DeclareTextCommand{\textparagraph}{PD1}{\266} % paragraph
\DeclareTextCommand{\textperiodcentered}{PD1}{\267} % periodcentered
\DeclareTextCommand{\textcedilla}{PD1}{\270} % cedilla
\DeclareTextCommand{\textonesuperior}{PD1}{\271} % onesuperior
\DeclareTextCommand{\textordmasculine}{PD1}{\272} % ordmasculine
\DeclareTextCommand{\guillemotright}{PD1}{\273} % guillemotright
\DeclareTextCommand{\textonequarter}{PD1}{\274} % onequarter
\DeclareTextCommand{\textonehalf}{PD1}{\275} % onehalf
\DeclareTextCommand{\textthreequarters}{PD1}{\276} % threequarters
\DeclareTextCommand{\textquestiondown}{PD1}{\277} % questiondown
\DeclareTextCompositeCommand{\`}{PD1}{A}{\300} % Agrave
\DeclareTextCompositeCommand{\'}{PD1}{A}{\301} % Aacute
\DeclareTextCompositeCommand{\^}{PD1}{A}{\302} % Acircumflex
\DeclareTextCompositeCommand{\~}{PD1}{A}{\303} % Atilde
\DeclareTextCompositeCommand{\"}{PD1}{A}{\304} % Adieresis
\DeclareTextCompositeCommand{\r}{PD1}{A}{\305} % Aring
\DeclareTextCommand{\AE}{PD1}{\306} % AE
\DeclareTextCompositeCommand{\c}{PD1}{C}{\307} % Ccedilla
\DeclareTextCompositeCommand{\`}{PD1}{E}{\310} % Egrave
\DeclareTextCompositeCommand{\'}{PD1}{E}{\311} % Eacute
\DeclareTextCompositeCommand{\^}{PD1}{E}{\312} % Ecircumflex
\DeclareTextCompositeCommand{\"}{PD1}{E}{\313} % Edieresis
\DeclareTextCompositeCommand{\`}{PD1}{I}{\314} % Igrave
\DeclareTextCompositeCommand{\'}{PD1}{I}{\315} % Iacute
\DeclareTextCompositeCommand{\^}{PD1}{I}{\316} % Icircumflex
\DeclareTextCompositeCommand{\"}{PD1}{I}{\317} % Idieresis
\DeclareTextCommand{\DH}{PD1}{\320} % Eth
\DeclareTextCommand{\DJ}{PD1}{\320} % Eth
\DeclareTextCompositeCommand{\~}{PD1}{N}{\321} % Ntilde
\DeclareTextCompositeCommand{\`}{PD1}{O}{\322} % Ograve
\DeclareTextCompositeCommand{\'}{PD1}{O}{\323} % Oacute
\DeclareTextCompositeCommand{\^}{PD1}{O}{\324} % Ocircumflex
\DeclareTextCompositeCommand{\~}{PD1}{O}{\325} % Otilde
\DeclareTextCompositeCommand{\"}{PD1}{O}{\326} % Odieresis
\DeclareTextCommand{\textmultiply}{PD1}{\327} % multiply
\DeclareTextCommand{\O}{PD1}{\330} % Oslash
\DeclareTextCompositeCommand{\`}{PD1}{U}{\331} % Ugrave
\DeclareTextCompositeCommand{\'}{PD1}{U}{\332} % Uacute
\DeclareTextCompositeCommand{\^}{PD1}{U}{\333} % Ucircumflex
\DeclareTextCompositeCommand{\"}{PD1}{U}{\334} % Udieresis
\DeclareTextCompositeCommand{\'}{PD1}{Y}{\335} % Yacute
\DeclareTextCommand{\TH}{PD1}{\336} % Thorn
\DeclareTextCommand{\ss}{PD1}{\337} % germandbls
\DeclareTextCompositeCommand{\`}{PD1}{a}{\340} % agrave
\DeclareTextCompositeCommand{\'}{PD1}{a}{\341} % aacute
\DeclareTextCompositeCommand{\^}{PD1}{a}{\342} % acircumflex
\DeclareTextCompositeCommand{\~}{PD1}{a}{\343} % atilde
\DeclareTextCompositeCommand{\"}{PD1}{a}{\344} % adieresis
\DeclareTextCompositeCommand{\r}{PD1}{a}{\345} % aring
```

```
\DeclareTextCommand{\ae}{PD1}{\346} % ae
\DeclareTextCompositeCommand{\c}{PD1}{c}{\347} % ccedilla
\DeclareTextCompositeCommand{\‘}{PD1}{e}{\350} % egrave
\DeclareTextCompositeCommand{\’}{PD1}{e}{\351} % eacute
\DeclareTextCompositeCommand{\^}{PD1}{e}{\352} % ecircumflex
\DeclareTextCompositeCommand{\"}{PD1}{e}{\353} % edieresis
\DeclareTextCompositeCommand{\‘}{PD1}{i}{\354} % igrave
\DeclareTextCompositeCommand{\‘}{PD1}{\i}{\354} % igrave
\DeclareTextCompositeCommand{\’}{PD1}{i}{\355} % iacute
\DeclareTextCompositeCommand{\’}{PD1}{\i}{\355} % iacute
\DeclareTextCompositeCommand{\^}{PD1}{i}{\356} % icircumflex
\DeclareTextCompositeCommand{\^}{PD1}{\i}{\356} % icircumflex
\DeclareTextCompositeCommand{\"}{PD1}{i}{\357} % idieresis
\DeclareTextCompositeCommand{\"}{PD1}{\i}{\357} % idieresis
\DeclareTextCommand{\dh}{PD1}{\360} % eth
\DeclareTextCompositeCommand{\~}{PD1}{n}{\361} % ntilde
\DeclareTextCompositeCommand{\‘}{PD1}{o}{\362} % ograve
\DeclareTextCompositeCommand{\’}{PD1}{o}{\363} % oacute
\DeclareTextCompositeCommand{\^}{PD1}{o}{\364} % ocircumflex
\DeclareTextCompositeCommand{\~}{PD1}{o}{\365} % otilde
\DeclareTextCompositeCommand{\"}{PD1}{o}{\366} % odieresis
\DeclareTextCommand{\textdivide}{PD1}{\367} % divide
\DeclareTextCommand{\o}{PD1}{\370} % oslash
\DeclareTextCompositeCommand{\‘}{PD1}{u}{\371} % ugrave
\DeclareTextCompositeCommand{\’}{PD1}{u}{\372} % uacute
\DeclareTextCompositeCommand{\^}{PD1}{u}{\373} % ucircumflex
\DeclareTextCompositeCommand{\"}{PD1}{u}{\374} % udieresis
\DeclareTextCompositeCommand{\’}{PD1}{y}{\375} % yacute
\DeclareTextCommand{\th}{PD1}{\376} % thorn
\DeclareTextCompositeCommand{\"}{PD1}{y}{\377} % ydieresis
\DeclareTextCommand{\ij}{PD1}{\377}
```

Glyphs that consist of several characters.

```
\DeclareTextCommand{\SS}{PD1}{SS}
\DeclareTextCommand{\textcelsius}{PD1}{\textdegree C}
```

Aliases (german.sty)

```
\DeclareTextCommand{\textglqq}{PD1}{\quotedblbase}
\DeclareTextCommand{\textgrqq}{PD1}{\textquotedblleft}
\DeclareTextCommand{\textglq}{PD1}{\quotesinglbase}
\DeclareTextCommand{\textgrq}{PD1}{\textquoteleft}
\DeclareTextCommand{\textflqq}{PD1}{\guillemotleft}
\DeclareTextCommand{\textfrqq}{PD1}{\guillemotright}
\DeclareTextCommand{\textflq}{PD1}{\guilsinglleft}
\DeclareTextCommand{\textfrq}{PD1}{\guilsinglright}
```

Aliases (math names)

```
\DeclareTextCommand{\textneg}{PD1}{\textlogicalnot}
\DeclareTextCommand{\texttimes}{PD1}{\textmultiply}
\DeclareTextCommand{\textdiv}{PD1}{\textdivide}
\DeclareTextCommand{\textpm}{PD1}{\textplusminus}
\DeclareTextCommand{\textcdot}{PD1}{\textperiodcentered}
\DeclareTextCommand{\textbeta}{PD1}{\ss}
```

Polish aliases. PDF encoding does not have the characters, but it is useful to Poles to have the plain letters regardless. Requested by Wojciech Myszka ¡W.Myszka@immt.pwr.wroc.pl¿

```
\DeclareTextCompositeCommand{\k}{PD1}{a}{a} % aogonek
\DeclareTextCompositeCommand{\’}{PD1}{c}{c} % cacute
\DeclareTextCompositeCommand{\k}{PD1}{e}{e} % eogonek
\DeclareTextCompositeCommand{\’}{PD1}{n}{n} % nacute
```

```
\DeclareTextCompositeCommand{\'}{PD1}{s}{s} % sacute
\DeclareTextCompositeCommand{\'}{PD1}{z}{z} % zacute
\DeclareTextCompositeCommand{\.}{PD1}{z}{z} % zdot
\DeclareTextCompositeCommand{\k}{PD1}{A}{A} % Aogonek
\DeclareTextCompositeCommand{\'}{PD1}{C}{C} % Cacute
\DeclareTextCompositeCommand{\k}{PD1}{E}{E} % Eogonek
\DeclareTextCompositeCommand{\'}{PD1}{N}{N} % Nacute
\DeclareTextCompositeCommand{\'}{PD1}{S}{S} % Sacute
\DeclareTextCompositeCommand{\'}{PD1}{Z}{Z} % Zacute
\DeclareTextCompositeCommand{\.}{PD1}{Z}{Z} % Zdot
```

⟨/pd1enc⟩

49.2 PU encoding

⟨∗puenc⟩

```
\DeclareFontEncoding{PU}{}{}
```

49.2.1 Basic Latin

Special white space escape characters not for use in bookmarks but for other PDF strings.

```
\DeclareTextCommand{\textLF}{PU}{\80\012} % line feed
\DeclareTextCommand{\textCR}{PU}{\80\015} % carriage return
\DeclareTextCommand{\textHT}{PU}{\80\011} % horizontal tab
\DeclareTextCommand{\textBS}{PU}{\80\010} % backspace
\DeclareTextCommand{\textFF}{PU}{\80\014} % formfeed
```

Accents

```
\DeclareTextAccent{\‘}{PU}{\textgrave}
\DeclareTextAccent{\’}{PU}{\textacute}
\DeclareTextAccent{\^}{PU}{\textcircumflex}
\DeclareTextAccent{\~}{PU}{\texttilde}
\DeclareTextAccent{\"}{PU}{\textdieresis}
\DeclareTextAccent{\r}{PU}{\textring}
\DeclareTextAccent{\v}{PU}{\textcaron}
\DeclareTextAccent{\.}{PU}{\textdotaccent}
\DeclareTextAccent{\c}{PU}{\textcedilla}
\DeclareTextAccent{\U}{PU}{\textbreve}
\DeclareTextAccent{\C}{PU}{\textdoublegrave}
\DeclareTextCompositeCommand{\‘}{PU}{\@empty}{\textgrave}
\DeclareTextCompositeCommand{\’}{PU}{\@empty}{\textacute}
\DeclareTextCompositeCommand{\^}{PU}{\@empty}{\textcircumflex}
\DeclareTextCompositeCommand{\~}{PU}{\@empty}{\texttilde}
\DeclareTextCompositeCommand{\"}{PU}{\@empty}{\textdieresis}
\DeclareTextCompositeCommand{\r}{PU}{\@empty}{\textring}
\DeclareTextCompositeCommand{\v}{PU}{\@empty}{\textcaron}
\DeclareTextCompositeCommand{\.}{PU}{\@empty}{\textdotaccent}
\DeclareTextCompositeCommand{\c}{PU}{\@empty}{\textcedilla}
\DeclareTextCompositeCommand{\U}{PU}{\@empty}{\textbreve}
\DeclareTextCompositeCommand{\C}{PU}{\@empty}{\textdoublegrave}
\DeclareTextCommand{\=}{PU}[1]{\TextSymbolUnavailable{\={#1}}#1}
\DeclareTextCommand{\H}{PU}[1]{\TextSymbolUnavailable{\H{#1}}#1}
\DeclareTextCommand{\k}{PU}[1]{\TextSymbolUnavailable{\k{#1}}#1}
\DeclareTextCommand{\u}{PU}[1]{\TextSymbolUnavailable{\u{#1}}#1}
```

Accent glyph names

```
\DeclareTextCommand{\textbreve}{PU}{\80\030} % breve
\DeclareTextCommand{\textcaron}{PU}{\80\031} % caron
\DeclareTextCommand{\textcircumflex}{PU}{\80\032} % circumflex
\DeclareTextCommand{\textdotaccent}{PU}{\80\033} % dotaccent
```

```
\DeclareTextCommand{\texthungarumlaut}{PU}{\80\034} % hungarumlaut
\DeclareTextCommand{\textogonek}{PU}{\80\035} % ogonek
\DeclareTextCommand{\textring}{PU}{\80\036} % ring
\DeclareTextCommand{\texttilde}{PU}{\80\037} % tilde
\DeclareTextCommand{\textdoublegrave}{PU}{\83\017} % double grave
```

\040: space
\041: exclam

```
\DeclareTextCommand{\textquotedbl}{PU}{\string"} % quotedbl \80\042
\DeclareTextCommand{\textnumbersign}{PU}{\80\043} % numbersign
\DeclareTextCommand{\textdollar}{PU}{\80\044} % dollar
\DeclareTextCommand{\textpercent}{PU}{\80\045} % percent
\DeclareTextCommand{\textampersand}{PU}{\80\046} % ampersand
```

\047: quotesingle

```
\DeclareTextCommand{\textparenleft}{PU}{\80\050} % parenleft
\DeclareTextCommand{\textparenright}{PU}{\80\051} % parenright
```

\052: asterisk
\053: plus
\054: comma
\055: hyphen
\056: period
\057: slash
\060...\071: 0...9
\072: colon
\073: semicolon

```
\DeclareTextCommand{\textless}{PU}{<} % less \80\074
```

\075: equal

```
\DeclareTextCommand{\textgreater}{PU}{>} % greater \80\076
```

\077: question
\100: at
\101...\132: A...Z
\133: bracketleft

```
\DeclareTextCommand{\textbackslash}{PU}{\80\134} % backslash
```

\135: bracketright

```
\DeclareTextCommand{\textasciicircum}{PU}{\80\136} % asciicircum
\DeclareTextCommand{\textunderscore}{PU}{\80\137} % underscore
\DeclareTextCommand{\textgrave}{PU}{\80\140} % grave
```

\141...\172: a...z

```
\DeclareTextCompositeCommand{\.}{PU}{i}{i} % i
\DeclareTextCommand{\j}{PU}{j} % jdotless
\DeclareTextCommand{\textbraceleft}{PU}{\80\173} % braceleft
\DeclareTextCommand{\textbar}{PU}{|} % bar
\DeclareTextCommand{\textbraceright}{PU}{\80\175} % braceright
\DeclareTextCommand{\textasciitilde}{PU}{\80\176} % asciitilde
```

No glyph \177 in PDFDocEncoding.

49.2.2 Latin-1 Supplement

```
\DeclareTextCommand{\textminus}{PU}{-} % minus, \80\212
\DeclareTextCommand{\textfi}{PU}{fi} % fi ?? \80\223
\DeclareTextCommand{\textfl}{PU}{fl} % fl ?? \80\224
```

There are two positions for the glyphs from \80\225 until \80\236. See the test files testbmoe., testbml, testbmsc, testbmzc, and testbmyi for details. Problematic are all positions, but especially \OE, \oe, and \i.

```
%\DeclareTextCommand{\OE}{PU}{OE} % OE
%\DeclareTextCommand{\oe}{PU}{oe} % oe
```

The euro \240 is inserted in version 1.3 of the pdf specification.

```
\DeclareTextCommand{\textexclamdown}{PU}{\80\241} % exclamdown
\DeclareTextCommand{\textcent}{PU}{\80\242} % cent
\DeclareTextCommand{\textsterling}{PU}{\80\243} % sterling
\DeclareTextCommand{\textcurrency}{PU}{\80\244} % currency
\DeclareTextCommand{\textyen}{PU}{\80\245} % yen
\DeclareTextCommand{\textbrokenbar}{PU}{\80\246} % brokenbar
\DeclareTextCommand{\textsection}{PU}{\80\247} % section
\DeclareTextCommand{\textdieresis}{PU}{\80\250} % dieresis
\DeclareTextCommand{\textcopyright}{PU}{\80\251} % copyright
\DeclareTextCommand{\textordfeminine}{PU}{\80\252} % ordfeminine
\DeclareTextCommand{\guillemotleft}{PU}{\80\253} % guillemotleft
\DeclareTextCommand{\textlogicalnot}{PU}{\80\254} % logicalnot
```

No glyph \255 in PDFDocEncoding.

```
\DeclareTextCommand{\textregistered}{PU}{\80\256} % registered
\DeclareTextCommand{\textmacron}{PU}{\80\257} % macron
\DeclareTextCommand{\textdegree}{PU}{\80\260} % degree
\DeclareTextCommand{\textplusminus}{PU}{\80\261} % plusminus
\DeclareTextCommand{\texttwosuperior}{PU}{\80\262} % twosuperior
\DeclareTextCommand{\textthreesuperior}{PU}{\80\263} % threesuperior
\DeclareTextCommand{\textacute}{PU}{\80\264} % acute
\DeclareTextCommand{\textmu}{PU}{\80\265} % mu
\DeclareTextCommand{\textparagraph}{PU}{\80\266} % paragraph
\DeclareTextCommand{\textperiodcentered}{PU}{\80\267} % periodcentered
\DeclareTextCommand{\textcedilla}{PU}{\80\270} % cedilla
\DeclareTextCommand{\textonesuperior}{PU}{\80\271} % onesuperior
\DeclareTextCommand{\textordmasculine}{PU}{\80\272} % ordmasculine
\DeclareTextCommand{\guillemotright}{PU}{\80\273} % guillemotright
\DeclareTextCommand{\textonequarter}{PU}{\80\274} % onequarter
\DeclareTextCommand{\textonehalf}{PU}{\80\275} % onehalf
\DeclareTextCommand{\textthreequarters}{PU}{\80\276} % threequarters
\DeclareTextCommand{\textquestiondown}{PU}{\80\277} % questiondown
\DeclareTextCompositeCommand{\`}{PU}{A}{\80\300} % Agrave
\DeclareTextCompositeCommand{\'}{PU}{A}{\80\301} % Aacute
\DeclareTextCompositeCommand{\^}{PU}{A}{\80\302} % Acircumflex
\DeclareTextCompositeCommand{\~}{PU}{A}{\80\303} % Atilde
\DeclareTextCompositeCommand{\"}{PU}{A}{\80\304} % Adieresis
\DeclareTextCompositeCommand{\r}{PU}{A}{\80\305} % Aring
\DeclareTextCommand{\AE}{PU}{\80\306} % AE
\DeclareTextCompositeCommand{\c}{PU}{C}{\80\307} % Ccedilla
\DeclareTextCompositeCommand{\`}{PU}{E}{\80\310} % Egrave
\DeclareTextCompositeCommand{\'}{PU}{E}{\80\311} % Eacute
\DeclareTextCompositeCommand{\^}{PU}{E}{\80\312} % Ecircumflex
\DeclareTextCompositeCommand{\"}{PU}{E}{\80\313} % Edieresis
\DeclareTextCompositeCommand{\`}{PU}{I}{\80\314} % Igrave
\DeclareTextCompositeCommand{\'}{PU}{I}{\80\315} % Iacute
\DeclareTextCompositeCommand{\^}{PU}{I}{\80\316} % Icircumflex
\DeclareTextCompositeCommand{\"}{PU}{I}{\80\317} % Idieresis
\DeclareTextCommand{\DH}{PU}{\80\320} % Eth
\DeclareTextCompositeCommand{\~}{PU}{N}{\80\321} % Ntilde
\DeclareTextCompositeCommand{\`}{PU}{O}{\80\322} % Ograve
\DeclareTextCompositeCommand{\'}{PU}{O}{\80\323} % Oacute
```

```
\DeclareTextCompositeCommand{\^}{PU}{O}{\80\324} % Ocircumflex
\DeclareTextCompositeCommand{\~}{PU}{O}{\80\325} % Otilde
\DeclareTextCompositeCommand{\"}{PU}{O}{\80\326} % Odieresis
\DeclareTextCommand{\textmultiply}{PU}{\80\327} % multiply
\DeclareTextCommand{\O}{PU}{\80\330} % Oslash
\DeclareTextCompositeCommand{\`}{PU}{U}{\80\331} % Ugrave
\DeclareTextCompositeCommand{\'}{PU}{U}{\80\332} % Uacute
\DeclareTextCompositeCommand{\^}{PU}{U}{\80\333} % Ucircumflex
\DeclareTextCompositeCommand{\"}{PU}{U}{\80\334} % Udieresis
\DeclareTextCompositeCommand{\'}{PU}{Y}{\80\335} % Yacute
\DeclareTextCommand{\TH}{PU}{\80\336} % Thorn
\DeclareTextCommand{\ss}{PU}{\80\337} % germandbls
\DeclareTextCompositeCommand{\`}{PU}{a}{\80\340} % agrave
\DeclareTextCompositeCommand{\'}{PU}{a}{\80\341} % aacute
\DeclareTextCompositeCommand{\^}{PU}{a}{\80\342} % acircumflex
\DeclareTextCompositeCommand{\~}{PU}{a}{\80\343} % atilde
\DeclareTextCompositeCommand{\"}{PU}{a}{\80\344} % adieresis
\DeclareTextCompositeCommand{\r}{PU}{a}{\80\345} % aring
\DeclareTextCommand{\ae}{PU}{\80\346} % ae
\DeclareTextCompositeCommand{\c}{PU}{c}{\80\347} % ccedilla
\DeclareTextCompositeCommand{\`}{PU}{e}{\80\350} % egrave
\DeclareTextCompositeCommand{\'}{PU}{e}{\80\351} % eacute
\DeclareTextCompositeCommand{\^}{PU}{e}{\80\352} % ecircumflex
\DeclareTextCompositeCommand{\"}{PU}{e}{\80\353} % edieresis
\DeclareTextCompositeCommand{\`}{PU}{i}{\80\354} % igrave
\DeclareTextCompositeCommand{\`}{PU}{\i}{\80\354} % igrave
\DeclareTextCompositeCommand{\'}{PU}{i}{\80\355} % iacute
\DeclareTextCompositeCommand{\'}{PU}{\i}{\80\355} % iacute
\DeclareTextCompositeCommand{\^}{PU}{i}{\80\356} % icircumflex
\DeclareTextCompositeCommand{\^}{PU}{\i}{\80\356} % icircumflex
\DeclareTextCompositeCommand{\"}{PU}{i}{\80\357} % idieresis
\DeclareTextCompositeCommand{\"}{PU}{\i}{\80\357} % idieresis
\DeclareTextCommand{\dh}{PU}{\80\360} % eth
\DeclareTextCompositeCommand{\~}{PU}{n}{\80\361} % ntilde
\DeclareTextCompositeCommand{\`}{PU}{o}{\80\362} % ograve
\DeclareTextCompositeCommand{\'}{PU}{o}{\80\363} % oacute
\DeclareTextCompositeCommand{\^}{PU}{o}{\80\364} % ocircumflex
\DeclareTextCompositeCommand{\~}{PU}{o}{\80\365} % otilde
\DeclareTextCompositeCommand{\"}{PU}{o}{\80\366} % odieresis
\DeclareTextCommand{\textdivide}{PU}{\80\367} % divide
\DeclareTextCommand{\o}{PU}{\80\370} % oslash
\DeclareTextCompositeCommand{\`}{PU}{u}{\80\371} % ugrave
\DeclareTextCompositeCommand{\'}{PU}{u}{\80\372} % uacute
\DeclareTextCompositeCommand{\^}{PU}{u}{\80\373} % ucircumflex
\DeclareTextCompositeCommand{\"}{PU}{u}{\80\374} % udieresis
\DeclareTextCompositeCommand{\'}{PU}{y}{\80\375} % yacute
\DeclareTextCommand{\th}{PU}{\80\376} % thorn
\DeclareTextCompositeCommand{\"}{PU}{y}{\80\377} % ydieresis
\DeclareTextCommand{\ij}{PU}{\80\377}
```

Glyphs that consist of several characters.

```
\DeclareTextCommand{\SS}{PU}{SS}
```

Aliases (german.sty)

```
\DeclareTextCommand{\textglqq}{PU}{\quotedblbase}
\DeclareTextCommand{\textgrqq}{PU}{\textquotedblleft}
\DeclareTextCommand{\textglq}{PU}{\quotesinglbase}
\DeclareTextCommand{\textgrq}{PU}{\textquoteleft}
\DeclareTextCommand{\textflqq}{PU}{\guillemotleft}
```

```
\DeclareTextCommand{\textfrqq}{PU}{\guillemotright}
\DeclareTextCommand{\textflq}{PU}{\guilsinglleft}
\DeclareTextCommand{\textfrq}{PU}{\guilsinglright}
```

Aliases (math names)

```
\DeclareTextCommand{\textneg}{PU}{\textlogicalnot}
\DeclareTextCommand{\texttimes}{PU}{\textmultiply}
\DeclareTextCommand{\textdiv}{PU}{\textdivide}
\DeclareTextCommand{\textpm}{PU}{\textplusminus}
\DeclareTextCommand{\textcdot}{PU}{\textperiodcentered}
```

49.2.3 Latin Extended-A

```
\DeclareTextCompositeCommand{\=}{PU}{A}{\81\000}% Amacron
\DeclareTextCompositeCommand{\=}{PU}{a}{\81\001}% amacron
\DeclareTextCompositeCommand{\u}{PU}{A}{\81\002}% Abreve
\DeclareTextCompositeCommand{\u}{PU}{a}{\81\003}% abreve
\DeclareTextCompositeCommand{\k}{PU}{A}{\81\004} % Aogonek
\DeclareTextCompositeCommand{\k}{PU}{a}{\81\005} % aogonek
\DeclareTextCompositeCommand{\'}{PU}{C}{\81\006} % Cacute
\DeclareTextCompositeCommand{\'}{PU}{c}{\81\007} % cacute
\DeclareTextCompositeCommand{\^}{PU}{C}{\81\010} % Ccircumflex
\DeclareTextCompositeCommand{\^}{PU}{c}{\81\011} % ccircumflex
\DeclareTextCompositeCommand{\.}{PU}{C}{\81\012} % Cdot
\DeclareTextCompositeCommand{\.}{PU}{c}{\81\013} % cdot
\DeclareTextCompositeCommand{\v}{PU}{C}{\81\014} % Ccaron
\DeclareTextCompositeCommand{\v}{PU}{c}{\81\015} % ccaron
\DeclareTextCompositeCommand{\v}{PU}{D}{\81\016} % Dcaron
\DeclareTextCompositeCommand{\v}{PU}{d}{\81\017} % dcaron
\DeclareTextCommand{\DJ}{PU}{\81\020} % Dslash
\DeclareTextCommand{\dj}{PU}{\81\021} % dslash
\DeclareTextCompositeCommand{\=}{PU}{E}{\81\022} % Emacron
\DeclareTextCompositeCommand{\=}{PU}{e}{\81\023} % emacron
\DeclareTextCompositeCommand{\u}{PU}{E}{\81\024} % Ebreve
\DeclareTextCompositeCommand{\u}{PU}{e}{\81\025} % ebreve
\DeclareTextCompositeCommand{\.}{PU}{E}{\81\026} % Edot
\DeclareTextCompositeCommand{\.}{PU}{e}{\81\027} % edot
\DeclareTextCompositeCommand{\k}{PU}{E}{\81\030} % Eogonek
\DeclareTextCompositeCommand{\k}{PU}{e}{\81\031} % eogonek
\DeclareTextCompositeCommand{\v}{PU}{E}{\81\032} % Ecaron
\DeclareTextCompositeCommand{\v}{PU}{e}{\81\033} % ecaron
\DeclareTextCompositeCommand{\^}{PU}{G}{\81\034} % Gcircumflex
\DeclareTextCompositeCommand{\^}{PU}{g}{\81\035} % gcircumflex
\DeclareTextCompositeCommand{\u}{PU}{G}{\81\036} % Gbreve
\DeclareTextCompositeCommand{\u}{PU}{g}{\81\037} % gbreve
\DeclareTextCompositeCommand{\.}{PU}{G}{\81\040} % Gdot
\DeclareTextCompositeCommand{\.}{PU}{g}{\81\041} % gdot
\DeclareTextCompositeCommand{\c}{PU}{G}{\81\042} % Gcedilla
\DeclareTextCompositeCommand{\c}{PU}{g}{\81\043} % gcedilla
\DeclareTextCompositeCommand{\^}{PU}{H}{\81\044} % Hcircumflex
\DeclareTextCompositeCommand{\^}{PU}{h}{\81\045} % hcircumflex
\DeclareTextCommand{\textHslash}{PU}{\81\046} % Hslash
\DeclareTextCommand{\texthslash}{PU}{\81\047} % hslash
\DeclareTextCompositeCommand{\~}{PU}{I}{\81\050} % Itilde
\DeclareTextCompositeCommand{\~}{PU}{i}{\81\051} % itilde
\DeclareTextCompositeCommand{\~}{PU}{\i}{\81\051} % itilde
\DeclareTextCompositeCommand{\=}{PU}{I}{\81\052} % Imacron
\DeclareTextCompositeCommand{\=}{PU}{i}{\81\053} % imacron
\DeclareTextCompositeCommand{\=}{PU}{\i}{\81\053} % imacron
```

```
\DeclareTextCompositeCommand{\u}{PU}{I}{\81\054} % Ibreve
\DeclareTextCompositeCommand{\u}{PU}{i}{\81\055} % ibreve
\DeclareTextCompositeCommand{\u}{PU}{\i}{\81\055} % ibreve
\DeclareTextCompositeCommand{\k}{PU}{I}{\81\056} % Iogonek
\DeclareTextCompositeCommand{\k}{PU}{i}{\81\057} % iogonek
\DeclareTextCompositeCommand{\k}{PU}{\i}{\81\057} % iogonek
\DeclareTextCompositeCommand{\.}{PU}{I}{\81\060} % Idot
\DeclareTextCommand{\i}{PU}{\81\061} % idotless
% IJlig
% ijlig
\DeclareTextCompositeCommand{\^}{PU}{J}{\81\064} % Jcircumflex
\DeclareTextCompositeCommand{\^}{PU}{j}{\81\065} % jcircumflex
\DeclareTextCompositeCommand{\^}{PU}{\j}{\81\065} % jcircumflex
\DeclareTextCompositeCommand{\c}{PU}{K}{\81\066} % Kcedilla
\DeclareTextCompositeCommand{\c}{PU}{k}{\81\067} % kcedilla
% kgreen
\DeclareTextCompositeCommand{\'}{PU}{L}{\81\071} % Lacute
\DeclareTextCompositeCommand{\'}{PU}{l}{\81\072} % lacute
\DeclareTextCompositeCommand{\c}{PU}{L}{\81\073} % Lcedilla
\DeclareTextCompositeCommand{\c}{PU}{l}{\81\074} % lcedilla
\DeclareTextCompositeCommand{\v}{PU}{L}{\81\075} % Lcaron
\DeclareTextCompositeCommand{\v}{PU}{l}{\81\076} % lcaron
% L middle dot
% l middle dot
\DeclareTextCommand{\L}{PU}{\81\101} % Lslash
\DeclareTextCommand{\l}{PU}{\81\102} % lslash
\DeclareTextCompositeCommand{\'}{PU}{N}{\81\103} % Nacute
\DeclareTextCompositeCommand{\'}{PU}{n}{\81\104} % nacute
\DeclareTextCompositeCommand{\c}{PU}{N}{\81\105} % Ncedilla
\DeclareTextCompositeCommand{\c}{PU}{n}{\81\106} % ncedilla
\DeclareTextCompositeCommand{\v}{PU}{N}{\81\107} % Ncaron
\DeclareTextCompositeCommand{\v}{PU}{n}{\81\110} % ncaron
% n apostrophe
\DeclareTextCommand{\NG}{PU}{\81\112} % NG
\DeclareTextCommand{\ng}{PU}{\81\113} % ng
\DeclareTextCompositeCommand{\=}{PU}{O}{\81\114} % Omacron
\DeclareTextCompositeCommand{\=}{PU}{o}{\81\115} % omacron
\DeclareTextCompositeCommand{\u}{PU}{O}{\81\116} % Obreve
\DeclareTextCompositeCommand{\u}{PU}{o}{\81\117} % obreve
\DeclareTextCompositeCommand{\H}{PU}{O}{\81\120} % Odoubleacute
\DeclareTextCompositeCommand{\H}{PU}{o}{\81\121} % odoubleacute
\DeclareTextCommand{\OE}{PU}{\81\122} % OE
\DeclareTextCommand{\oe}{PU}{\81\123} % oe
\DeclareTextCompositeCommand{\'}{PU}{R}{\81\124} % Racute
\DeclareTextCompositeCommand{\'}{PU}{r}{\81\125} % racute
\DeclareTextCompositeCommand{\c}{PU}{R}{\81\126} % Rcedilla
\DeclareTextCompositeCommand{\c}{PU}{r}{\81\127} % rcedilla
\DeclareTextCompositeCommand{\v}{PU}{R}{\81\130} % Rcaron
\DeclareTextCompositeCommand{\v}{PU}{r}{\81\131} % rcaron
\DeclareTextCompositeCommand{\'}{PU}{S}{\81\132} % Sacute
\DeclareTextCompositeCommand{\'}{PU}{s}{\81\133} % sacute
\DeclareTextCompositeCommand{\^}{PU}{S}{\81\134} % Scircumflex
\DeclareTextCompositeCommand{\^}{PU}{s}{\81\135} % scircumflex
\DeclareTextCompositeCommand{\c}{PU}{S}{\81\136} % Scedilla
\DeclareTextCompositeCommand{\c}{PU}{s}{\81\137} % scedilla
\DeclareTextCompositeCommand{\v}{PU}{S}{\81\140} % Scaron
\DeclareTextCompositeCommand{\v}{PU}{s}{\81\141} % scaron
```

```
\DeclareTextCompositeCommand{\c}{PU}{T}{\81\142} % Tcedilla
\DeclareTextCompositeCommand{\c}{PU}{t}{\81\143} % tcedilla
\DeclareTextCompositeCommand{\v}{PU}{T}{\81\144} % Tcaron
\DeclareTextCompositeCommand{\v}{PU}{t}{\81\145} % tcaron
\DeclareTextCommand{\textTslash}{PU}{\81\146} % Tslash
\DeclareTextCommand{\texttslash}{PU}{\81\147} % tslash
\DeclareTextCompositeCommand{\~}{PU}{U}{\81\150} % Utilde
\DeclareTextCompositeCommand{\~}{PU}{u}{\81\151} % utilde
\DeclareTextCompositeCommand{\=}{PU}{U}{\81\152} % Umacron
\DeclareTextCompositeCommand{\=}{PU}{u}{\81\153} % umacron
\DeclareTextCompositeCommand{\u}{PU}{U}{\81\154} % Ubreve
\DeclareTextCompositeCommand{\u}{PU}{u}{\81\155} % ubreve
\DeclareTextCompositeCommand{\r}{PU}{U}{\81\156} % Uring
\DeclareTextCompositeCommand{\r}{PU}{u}{\81\157} % uring
\DeclareTextCompositeCommand{\H}{PU}{U}{\81\160} % Udoubleacute
\DeclareTextCompositeCommand{\H}{PU}{u}{\81\161} % udoubleacute
\DeclareTextCompositeCommand{\k}{PU}{U}{\81\162} % Uogonek
\DeclareTextCompositeCommand{\k}{PU}{u}{\81\163} % uogonek
\DeclareTextCompositeCommand{\^}{PU}{W}{\81\164} % Wcircumflex
\DeclareTextCompositeCommand{\^}{PU}{w}{\81\165} % wcircumflex
\DeclareTextCompositeCommand{\^}{PU}{Y}{\81\166} % Ycircumflex
\DeclareTextCompositeCommand{\^}{PU}{y}{\81\167} % ycircumflex
\DeclareTextCompositeCommand{\"}{PU}{Y}{\81\170} % Ydieresis
\DeclareTextCommand{\IJ}{PU}{\81\170}
\DeclareTextCompositeCommand{\'}{PU}{Z}{\81\171} % Zacute
\DeclareTextCompositeCommand{\'}{PU}{z}{\81\172} % zacute
\DeclareTextCompositeCommand{\.}{PU}{Z}{\81\173} % Zdot
\DeclareTextCompositeCommand{\.}{PU}{z}{\81\174} % zdot
\DeclareTextCompositeCommand{\v}{PU}{Z}{\81\175} % Zcaron
\DeclareTextCompositeCommand{\v}{PU}{z}{\81\176} % zcaron
```

49.2.4 Latin Extended-B

```
\DeclareTextCommand{\textflorin}{PU}{\81\222} % florin
\DeclareTextCompositeCommand{\v}{PU}{A}{\81\315} % Acaron
\DeclareTextCompositeCommand{\v}{PU}{a}{\81\316} % acaron
\DeclareTextCompositeCommand{\v}{PU}{I}{\81\317} % Icaron
\DeclareTextCompositeCommand{\v}{PU}{i}{\81\320} % icaron
\DeclareTextCompositeCommand{\v}{PU}{\i}{\81\320} % icaron
\DeclareTextCompositeCommand{\v}{PU}{O}{\81\321} % Ocaron
\DeclareTextCompositeCommand{\v}{PU}{o}{\81\322} % ocaron
\DeclareTextCompositeCommand{\v}{PU}{U}{\81\323} % Ucaron
\DeclareTextCompositeCommand{\v}{PU}{u}{\81\324} % ucaron
\DeclareTextCommand{\textGslash}{PU}{\81\344} % Gslash
\DeclareTextCommand{\textgslash}{PU}{\81\345} % gslash
\DeclareTextCompositeCommand{\v}{PU}{G}{\81\346} % Gcaron
\DeclareTextCompositeCommand{\v}{PU}{g}{\81\347} % gcaron
\DeclareTextCompositeCommand{\v}{PU}{K}{\81\350} % Kcaron
\DeclareTextCompositeCommand{\v}{PU}{k}{\81\351} % kcaron
\DeclareTextCompositeCommand{\k}{PU}{O}{\81\352} % Oogonek
\DeclareTextCompositeCommand{\k}{PU}{o}{\81\353} % oogonek
```

49.2.5 Greek

```
\DeclareTextCompositeCommand{\'}{PU}{\textAlpha}{\83\206}
\DeclareTextCompositeCommand{\'}{PU}{\textEpsilon}{\83\210}
\DeclareTextCompositeCommand{\'}{PU}{\textEta}{\83\211}
\DeclareTextCompositeCommand{\'}{PU}{\textIota}{\83\212}
\DeclareTextCompositeCommand{\'}{PU}{\textOmicron}{\83\214}
```

```
\DeclareTextCompositeCommand{\'}{PU}{\textUpsilon}{\83\216}
\DeclareTextCompositeCommand{\'}{PU}{\textOmega}{\83\217}
\DeclareTextCommand{\textIotadieresis}{PU}{\83\252}
\DeclareTextCompositeCommand{\'}{PU}{\textIotadieresis}{\83\220}
\DeclareTextCommand{\textAlpha}{PU}{\83\221}
\DeclareTextCommand{\textBeta}{PU}{\83\222}
\DeclareTextCommand{\textGamma}{PU}{\83\223}
\DeclareTextCommand{\textDelta}{PU}{\83\224}
\DeclareTextCommand{\textEpsilon}{PU}{\83\225}
\DeclareTextCommand{\textZeta}{PU}{\83\226}
\DeclareTextCommand{\textEta}{PU}{\83\227}
\DeclareTextCommand{\textTheta}{PU}{\83\230}
\DeclareTextCommand{\textIota}{PU}{\83\231}
\DeclareTextCommand{\textKappa}{PU}{\83\232}
\DeclareTextCommand{\textLambda}{PU}{\83\233}
\DeclareTextCommand{\textMu}{PU}{\83\234}
\DeclareTextCommand{\textNu}{PU}{\83\235}
\DeclareTextCommand{\textXi}{PU}{\83\236}
\DeclareTextCommand{\textOmicron}{PU}{\83\237}
\DeclareTextCommand{\textPi}{PU}{\83\240}
\DeclareTextCommand{\textRho}{PU}{\83\241}
\DeclareTextCommand{\textSigma}{PU}{\83\243}
\DeclareTextCommand{\textTau}{PU}{\83\244}
\DeclareTextCommand{\textUpsilon}{PU}{\83\245}
\DeclareTextCommand{\textPhi}{PU}{\83\246}
\DeclareTextCommand{\textChi}{PU}{\83\247}
\DeclareTextCommand{\textPsi}{PU}{\83\250}
\DeclareTextCommand{\textOmega}{PU}{\83\251}
\DeclareTextCompositeCommand{\"}{PU}{\textIota}{\83\252}
\DeclareTextCompositeCommand{\"}{PU}{\textUpsilon}{\83\253}
\DeclareTextCompositeCommand{\'}{PU}{\textalpha}{\83\254}
\DeclareTextCompositeCommand{\'}{PU}{\textepsilon}{\83\255}
\DeclareTextCompositeCommand{\'}{PU}{\texteta}{\83\256}
\DeclareTextCompositeCommand{\'}{PU}{\textiota}{\83\257}
\DeclareTextCommand{\textupsilonacute}{PU}{\83\315}
\DeclareTextCompositeCommand{\"}{PU}{\textupsilonacute}{\83\260}
\DeclareTextCommand{\textalpha}{PU}{\83\261}
\DeclareTextCommand{\textbeta}{PU}{\83\262}
\DeclareTextCommand{\textgamma}{PU}{\83\263}
\DeclareTextCommand{\textdelta}{PU}{\83\264}
\DeclareTextCommand{\textepsilon}{PU}{\83\265}
\DeclareTextCommand{\textzeta}{PU}{\83\266}
\DeclareTextCommand{\texteta}{PU}{\83\267}
\DeclareTextCommand{\texttheta}{PU}{\83\270}
\DeclareTextCommand{\textiota}{PU}{\83\271}
\DeclareTextCommand{\textkappa}{PU}{\83\272}
\DeclareTextCommand{\textlambda}{PU}{\83\273}
\DeclareTextCommand{\textmu}{PU}{\83\274}
\DeclareTextCommand{\textnu}{PU}{\83\275}
\DeclareTextCommand{\textxi}{PU}{\83\276}
\DeclareTextCommand{\textomicron}{PU}{\83\277}
\DeclareTextCommand{\textpi}{PU}{\83\300}
\DeclareTextCommand{\textrho}{PU}{\83\301}
\DeclareTextCommand{\textvarsigma}{PU}{\83\302}
\DeclareTextCommand{\textsigma}{PU}{\83\303}
\DeclareTextCommand{\texttau}{PU}{\83\304}
\DeclareTextCommand{\textupsilon}{PU}{\83\305}
```

```
\DeclareTextCommand{\textphi}{PU}{\83\306}
\DeclareTextCommand{\textchi}{PU}{\83\307}
\DeclareTextCommand{\textpsi}{PU}{\83\310}
\DeclareTextCommand{\textomega}{PU}{\83\311}
\DeclareTextCompositeCommand{\"}{PU}{\textiota}{\83\312}
\DeclareTextCompositeCommand{\"}{PU}{\textupsilon}{\83\313}
\DeclareTextCompositeCommand{\'}{PU}{\textomicron}{\83\314}
\DeclareTextCompositeCommand{\'}{PU}{\textupsilon}{\83\315}
\DeclareTextCompositeCommand{\'}{PU}{\textomega}{\83\316}
%\DeclareTextCommand{\textvartheta}{PU}{\83\321}
%\DeclareTextCommand{\textvarphi}{PU}{\83\325}
%\DeclareTextCommand{\textvarpi}{PU}{\83\326}
%\DeclareTextCommand{\textdigamma}{PU}{\83\334}
%\DeclareTextCommand{\textvarkappa}{PU}{\83\360}
%\DeclareTextCommand{\textvarrho}{PU}{\83\361}
```

49.2.6 Cyrillic

Thanks to Vladimir Volovich (vvv@vvv.vsu.ru) for the help with the Cyrillic glyph names.

```
\DeclareTextCommand{\CYRYO}{PU}{\84\001}% IO
\DeclareTextCompositeCommand{\"}{PU}{\CYRE}{\84\001}%
\DeclareTextCommand{\CYRDJE}{PU}{\84\002}% DJE
\DeclareTextCompositeCommand{\'}{PU}{\CYRG}{\84\003}% GJE
\DeclareTextCommand{\CYRIE}{PU}{\84\004}% ukrainian IE
\DeclareTextCommand{\CYRDZE}{PU}{\84\005}% DZE
\DeclareTextCommand{\CYRII}{PU}{\84\006}% byelorussian-ukrainian I
\DeclareTextCommand{\CYRYI}{PU}{\84\007}% YI
\DeclareTextCommand{\CYRJE}{PU}{\84\010}% JE
\DeclareTextCommand{\CYRLJE}{PU}{\84\011}% LJE
\DeclareTextCommand{\CYRNJE}{PU}{\84\012}% NJE
\DeclareTextCommand{\CYRTSHE}{PU}{\84\013}% TSHE
\DeclareTextCompositeCommand{\'}{PU}{\CYRK}{\84\014}% KJE
\DeclareTextCommand{\CYRUSHRT}{PU}{\84\016}% short U
\DeclareTextCommand{\CYRDZHE}{PU}{\84\017}% DZHE
\DeclareTextCommand{\CYRA}{PU}{\84\020}% A
\DeclareTextCommand{\CYRB}{PU}{\84\021}% BE
\DeclareTextCommand{\CYRV}{PU}{\84\022}% VE
\DeclareTextCommand{\CYRG}{PU}{\84\023}% GHE
\DeclareTextCommand{\CYRD}{PU}{\84\024}% DE
\DeclareTextCommand{\CYRE}{PU}{\84\025}% IE
\DeclareTextCommand{\CYRZH}{PU}{\84\026}% ZHE
\DeclareTextCommand{\CYRZ}{PU}{\84\027}% ZE
\DeclareTextCommand{\CYRI}{PU}{\84\030}% I
\DeclareTextCommand{\CYRISHRT}{PU}{\84\031}% short I
\DeclareTextCompositeCommand{\U}{PU}{\CYRI}{\84\031}%
\DeclareTextCommand{\CYRK}{PU}{\84\032}% KA
\DeclareTextCommand{\CYRL}{PU}{\84\033}% EL
\DeclareTextCommand{\CYRM}{PU}{\84\034}% EM
\DeclareTextCommand{\CYRN}{PU}{\84\035}% EN
\DeclareTextCommand{\CYRO}{PU}{\84\036}% O
\DeclareTextCommand{\CYRP}{PU}{\84\037}% PE
\DeclareTextCommand{\CYRR}{PU}{\84\040}% ER
\DeclareTextCommand{\CYRS}{PU}{\84\041}% ES
\DeclareTextCommand{\CYRT}{PU}{\84\042}% TE
\DeclareTextCommand{\CYRU}{PU}{\84\043}% U
\DeclareTextCommand{\CYRF}{PU}{\84\044}% EF
\DeclareTextCommand{\CYRH}{PU}{\84\045}% HA
```

```
\DeclareTextCommand{\CYRC}{PU}{\84\046}% TSE
\DeclareTextCommand{\CYRCH}{PU}{\84\047}% CHE
\DeclareTextCommand{\CYRSH}{PU}{\84\050}% SHA
\DeclareTextCommand{\CYRSHCH}{PU}{\84\051}% SHCHA
\DeclareTextCommand{\CYRHRDSN}{PU}{\84\052}% HARD SIGN
\DeclareTextCommand{\CYRERY}{PU}{\84\053}% YERU
\DeclareTextCommand{\CYRSFTSN}{PU}{\84\054}% SOFT SIGN
\DeclareTextCommand{\CYREREV}{PU}{\84\055}% E
\DeclareTextCommand{\CYRYU}{PU}{\84\056}% YU
\DeclareTextCommand{\CYRYA}{PU}{\84\057}% YA
\DeclareTextCommand{\cyra}{PU}{\84\060}% a
\DeclareTextCommand{\cyrb}{PU}{\84\061}% be
\DeclareTextCommand{\cyrv}{PU}{\84\062}% ve
\DeclareTextCommand{\cyrg}{PU}{\84\063}% ghe
\DeclareTextCommand{\cyrd}{PU}{\84\064}% de
\DeclareTextCommand{\cyre}{PU}{\84\065}% ie
\DeclareTextCommand{\cyrzh}{PU}{\84\066}% zhe
\DeclareTextCommand{\cyrz}{PU}{\84\067}% ze
\DeclareTextCommand{\cyri}{PU}{\84\070}% i
\DeclareTextCommand{\cyrishrt}{PU}{\84\071}% short i
\DeclareTextCompositeCommand{\U}{PU}{\cyri}{\84\071}%
\DeclareTextCommand{\cyrk}{PU}{\84\072}% ka
\DeclareTextCommand{\cyrl}{PU}{\84\073}% el
\DeclareTextCommand{\cyrm}{PU}{\84\074}% em
\DeclareTextCommand{\cyrn}{PU}{\84\075}% en
\DeclareTextCommand{\cyro}{PU}{\84\076}% o
\DeclareTextCommand{\cyrp}{PU}{\84\077}% pe
\DeclareTextCommand{\cyrr}{PU}{\84\100}% er
\DeclareTextCommand{\cyrs}{PU}{\84\101}% es
\DeclareTextCommand{\cyrt}{PU}{\84\102}% te
\DeclareTextCommand{\cyru}{PU}{\84\103}% u
\DeclareTextCommand{\cyrf}{PU}{\84\104}% ef
\DeclareTextCommand{\cyrh}{PU}{\84\105}% ha
\DeclareTextCommand{\cyrc}{PU}{\84\106}% tse
\DeclareTextCommand{\cyrch}{PU}{\84\107}% che
\DeclareTextCommand{\cyrsh}{PU}{\84\110}% sha
\DeclareTextCommand{\cyrshch}{PU}{\84\111}% shcha
\DeclareTextCommand{\cyrhrdsn}{PU}{\84\112}% hard sign
\DeclareTextCommand{\cyrery}{PU}{\84\113}% yeru
\DeclareTextCommand{\cyrsftsn}{PU}{\84\114}% soft sign
\DeclareTextCommand{\cyrerev}{PU}{\84\115}% e
\DeclareTextCommand{\cyryu}{PU}{\84\116}% yu
\DeclareTextCommand{\cyrya}{PU}{\84\117}% ya
\DeclareTextCommand{\cyryo}{PU}{\84\121}% io
\DeclareTextCompositeCommand{\"}{PU}{\cyre}{\84\121}%
\DeclareTextCommand{\cyrdje}{PU}{\84\122}% dje
\DeclareTextCompositeCommand{\'}{PU}{\cyrg}{\84\123}% gje
\DeclareTextCommand{\cyrie}{PU}{\84\124}% ukrainian ie
\DeclareTextCommand{\cyrdze}{PU}{\84\125}% dze
\DeclareTextCommand{\cyrii}{PU}{\84\126}% byelorussian-ukrainian i
\DeclareTextCommand{\cyryi}{PU}{\84\127}% yi
\DeclareTextCommand{\cyrje}{PU}{\84\130}% je
\DeclareTextCommand{\cyrlje}{PU}{\84\131}% lje
\DeclareTextCommand{\cyrnje}{PU}{\84\132}% nje
\DeclareTextCommand{\cyrtshe}{PU}{\84\133}% tshe
\DeclareTextCompositeCommand{\'}{PU}{\cyrk}{\84\134}% kje
\DeclareTextCommand{\cyrushrt}{PU}{\84\136}% short u
```

```
\DeclareTextCommand{\cyrdzhe}{PU}{\84\137}% dzhe
\DeclareTextCommand{\CYROMEGA}{PU}{\84\140}% OMEGA
\DeclareTextCommand{\cyromega}{PU}{\84\141}% omega
\DeclareTextCommand{\CYRYAT}{PU}{\84\142}% YAT
\DeclareTextCommand{\cyryat}{PU}{\84\143}% yat
\DeclareTextCommand{\CYRIOTE}{PU}{\84\144}% iotified E
\DeclareTextCommand{\cyriote}{PU}{\84\145}% iotified e
\DeclareTextCommand{\CYRLYUS}{PU}{\84\146}% little YUS
\DeclareTextCommand{\cyrlyus}{PU}{\84\147}% little yus
\DeclareTextCommand{\CYRIOTLYUS}{PU}{\84\150}% iotified little YUS
\DeclareTextCommand{\cyriotlyus}{PU}{\84\151}% iotified little yus
\DeclareTextCommand{\CYRBYUS}{PU}{\84\152}% big YUS
\DeclareTextCommand{\cyrbyus}{PU}{\84\153}% big yus
\DeclareTextCommand{\CYRIOTBYUS}{PU}{\84\154}% iotified big YUS
\DeclareTextCommand{\cyriotbyus}{PU}{\84\155}% iotified big yus
\DeclareTextCommand{\CYRKSI}{PU}{\84\156}% KSI
\DeclareTextCommand{\cyrksi}{PU}{\84\157}% ksi
\DeclareTextCommand{\CYRPSI}{PU}{\84\160}% PSI
\DeclareTextCommand{\cyrpsi}{PU}{\84\161}% psi
\DeclareTextCommand{\CYRFITA}{PU}{\84\162}% FITA
\DeclareTextCommand{\cyrfita}{PU}{\84\163}% fita
\DeclareTextCommand{\CYRIZH}{PU}{\84\164}% IZHITSA
\DeclareTextCommand{\cyrizh}{PU}{\84\165}% izhitsa
\DeclareTextCompositeCommand{\C}{PU}{\CYRIZH}{\84\166}% IZHITSA double grave
\DeclareTextCompositeCommand{\C}{PU}{\cyrizh}{\84\167}% izhitsa double grave
\DeclareTextCommand{\CYRUK}{PU}{\84\170}% UK
\DeclareTextCommand{\cyruk}{PU}{\84\171}% uk
\DeclareTextCommand{\CYROMEGARND}{PU}{\84\172}% round OMEGA
\DeclareTextCommand{\cyromegarnd}{PU}{\84\173}% round omega
\DeclareTextCommand{\CYROMEGATITLO}{PU}{\84\174}% OMEGA titlo
\DeclareTextCommand{\cyromegatitlo}{PU}{\84\175}% omega titlo
\DeclareTextCommand{\CYROT}{PU}{\84\176}% OT
\DeclareTextCommand{\cyrot}{PU}{\84\177}% ot
\DeclareTextCommand{\CYRKOPPA}{PU}{\84\200}% KOPPA
\DeclareTextCommand{\cyrkoppa}{PU}{\84\201}% koppa
\DeclareTextCommand{\cyrthousands}{PU}{\84\202}% thousands sign
%\DeclareTextCommand{\COMBINING TITLO}{PU}{\84\203}% COMBINING TITLO
%\DeclareTextCommand{\COMBINING PALATALIZATION}{PU}{\84\204}% COMBINING PALATALIZATION
%\DeclareTextCommand{\COMBINING DASIA PNEUMATA}{PU}{\84\205}% COMBINING DASIA PNEUMATA
%\DeclareTextCommand{\COMBINING PSILI PNEUMATA}{PU}{\84\206}% COMBINING PSILI PNEUMATA
\DeclareTextCommand{\CYRGUP}{PU}{\84\220}% GHE upturn
\DeclareTextCommand{\cyrgup}{PU}{\84\221}% ghe upturn
\DeclareTextCommand{\CYRGHCRS}{PU}{\84\222}% GHE stroke
\DeclareTextCommand{\cyrghcrs}{PU}{\84\223}% ghe stroke
\DeclareTextCommand{\CYRGHK}{PU}{\84\224}% GHE middle hook
\DeclareTextCommand{\cyrghk}{PU}{\84\225}% ghe middle hook
\DeclareTextCommand{\CYRZHDSC}{PU}{\84\226}% ZHE descender
\DeclareTextCommand{\cyrzhdsc}{PU}{\84\227}% zhe descender
\DeclareTextCommand{\CYRZDSC}{PU}{\84\230}% ZE descender
\DeclareTextCommand{\cyrzdsc}{PU}{\84\231}% ze descender
\DeclareTextCommand{\CYRKDSC}{PU}{\84\232}% KA descender
\DeclareTextCommand{\cyrkdsc}{PU}{\84\233}% ka descender
\DeclareTextCommand{\CYRKVCRS}{PU}{\84\234}% KA vertical stroke
\DeclareTextCommand{\cyrkvcrs}{PU}{\84\235}% ka vertical stroke
\DeclareTextCommand{\CYRKHCRS}{PU}{\84\236}% KA stroke
\DeclareTextCommand{\cyrkhcrs}{PU}{\84\237}% ka stroke
\DeclareTextCommand{\CYRKBEAK}{PU}{\84\240}% bashkir KA
```

```
\DeclareTextCommand{\cyrkbeak}{PU}{\84\241}% bashkir ka
\DeclareTextCommand{\CYRNDSC}{PU}{\84\242}% EN descender
\DeclareTextCommand{\cyrndsc}{PU}{\84\243}% en descender
\DeclareTextCommand{\CYRNG}{PU}{\84\244}% ligature EN GHE
\DeclareTextCommand{\cyrng}{PU}{\84\245}% ligature en ghe
\DeclareTextCommand{\CYRPHK}{PU}{\84\246}% PE middle hook
\DeclareTextCommand{\cyrphk}{PU}{\84\247}% pe middle hook
\DeclareTextCommand{\CYRABHHA}{PU}{\84\250}% abkhasian HA
\DeclareTextCommand{\cyrabhha}{PU}{\84\251}% abkhasian ha
\DeclareTextCommand{\CYRSDSC}{PU}{\84\252}% ES descender
\DeclareTextCommand{\cyrsdsc}{PU}{\84\253}% es descender
\DeclareTextCommand{\CYRTDSC}{PU}{\84\254}% TE descender
\DeclareTextCommand{\cyrtdsc}{PU}{\84\255}% te descender
\DeclareTextCommand{\CYRY}{PU}{\84\256}% straight U
\DeclareTextCommand{\cyry}{PU}{\84\257}% straight u
\DeclareTextCommand{\CYRYHCRS}{PU}{\84\260}% straight U stroke
\DeclareTextCommand{\cyryhcrs}{PU}{\84\261}% straight u stroke
\DeclareTextCommand{\CYRHDSC}{PU}{\84\262}% HA descender
\DeclareTextCommand{\cyrhdsc}{PU}{\84\263}% ha descender
\DeclareTextCommand{\CYRTETSE}{PU}{\84\264}% ligature TE TSE
\DeclareTextCommand{\cyrtetse}{PU}{\84\265}% ligature te tse
\DeclareTextCommand{\CYRCHRDSC}{PU}{\84\266}% CHE descender
\DeclareTextCommand{\cyrchrdsc}{PU}{\84\267}% che descender
\DeclareTextCommand{\CYRCHVCRS}{PU}{\84\270}% CHE vertical stroke
\DeclareTextCommand{\cyrchvcrs}{PU}{\84\271}% che vertical stroke
\DeclareTextCommand{\CYRSHHA}{PU}{\84\272}% SHHA
\DeclareTextCommand{\cyrshha}{PU}{\84\273}% shha
\DeclareTextCommand{\CYRABHCH}{PU}{\84\274}% abkhasian CHE
\DeclareTextCommand{\cyrabhch}{PU}{\84\275}% abkhasian che
\DeclareTextCommand{\CYRABHCHDSC}{PU}{\84\276}% abkhasian CHE descender
\DeclareTextCommand{\cyrabhchdsc}{PU}{\84\277}% abkhasian che descender
\DeclareTextCommand{\CYRpalochka}{PU}{\84\300}% palochka
\DeclareTextCompositeCommand{\U}{PU}{\CYRZH}{\84\301}% ZHE breve
\DeclareTextCompositeCommand{\U}{PU}{\cyrzh}{\84\302}% zhe breve
\DeclareTextCommand{\CYRKHK}{PU}{\84\303}% KA hook
\DeclareTextCommand{\cyrkhk}{PU}{\84\304}% ka hook
\DeclareTextCommand{\CYRNHK}{PU}{\84\307}% EN hook
\DeclareTextCommand{\cyrnhk}{PU}{\84\310}% en hook
\DeclareTextCommand{\CYRCHLDSC}{PU}{\84\313}% khakassian CHE
\DeclareTextCommand{\cyrchldsc}{PU}{\84\314}% khakassian che
\DeclareTextCompositeCommand{\U}{PU}{\CYRA}{\84\320}% A breve
\DeclareTextCompositeCommand{\U}{PU}{\cyra}{\84\321}% a breve
\DeclareTextCompositeCommand{\"}{PU}{\CYRA}{\84\322}% A diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyra}{\84\323}% a diaeresis
\DeclareTextCommand{\CYRAE}{PU}{\84\324}% ligature A IE
\DeclareTextCommand{\cyrae}{PU}{\84\325}% ligature a ie
\DeclareTextCompositeCommand{\U}{PU}{\CYRE}{\84\326}% IE breve
\DeclareTextCompositeCommand{\U}{PU}{\cyre}{\84\327}% ie breve
\DeclareTextCommand{\CYRSCHWA}{PU}{\84\330}% SCHWA
\DeclareTextCommand{\cyrschwa}{PU}{\84\331}% schwa
\DeclareTextCompositeCommand{\"}{PU}{\CYRSCHWA}{\84\332}% SCHWA diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyrschwa}{\84\333}% schwa diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\CYRZH}{\84\334}% ZHE diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyrzh}{\84\335}% zhe diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\CYRZ}{\84\336}% ZE diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyrz}{\84\337}% ze diaeresis
\DeclareTextCommand{\CYRABHDZE}{PU}{\84\340}% abkhasian DZE
```

```
\DeclareTextCommand{\cyrabhdze}{PU}{\84\341}% abkhasian dze
\DeclareTextCompositeCommand{\=}{PU}{\CYRI}{\84\342}% I macron
\DeclareTextCompositeCommand{\=}{PU}{\cyri}{\84\343}% i macron
\DeclareTextCompositeCommand{\"}{PU}{\CYRI}{\84\344}% I diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyri}{\84\345}% i diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\CYRO}{\84\346}% O diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyro}{\84\347}% o diaeresis
\DeclareTextCommand{\CYROTLD}{PU}{\84\350}% barred O
\DeclareTextCommand{\cyrotld}{PU}{\84\351}% barred o
\DeclareTextCompositeCommand{\"}{PU}{\CYROTLD}{\84\352}% barred O diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyrotld}{\84\353}% barred o diaeresis
\DeclareTextCompositeCommand{\=}{PU}{\CYRU}{\84\356}% U macron
\DeclareTextCompositeCommand{\=}{PU}{\cyru}{\84\357}% u macron
\DeclareTextCompositeCommand{\"}{PU}{\CYRU}{\84\360}% U diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyru}{\84\361}% u diaeresis
\DeclareTextCompositeCommand{\H}{PU}{\CYRU}{\84\362}% U double acute
\DeclareTextCompositeCommand{\H}{PU}{\cyru}{\84\363}% u double acute
\DeclareTextCompositeCommand{\"}{PU}{\CYRCH}{\84\364}% CHE diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyrch}{\84\365}% che diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\CYRERY}{\84\370}% YERU diaeresis
\DeclareTextCompositeCommand{\"}{PU}{\cyrery}{\84\371}% yeru diaeresis
```

49.2.7 Symbols

```
\DeclareTextCommand{\textendash}{PU}{\9040\023} % endash
\DeclareTextCommand{\textemdash}{PU}{\9040\024} % emdash
\DeclareTextCommand{\textquoteleft}{PU}{\9040\030} % quoteleft
\DeclareTextCommand{\textquoteright}{PU}{\9040\031} % quoteright
\DeclareTextCommand{\quotesinglbase}{PU}{\9040\032} % quotesinglbase
\DeclareTextCommand{\textquotedblleft}{PU}{\9040\034} % quotedblleft
\DeclareTextCommand{\textquotedblright}{PU}{\9040\035} % quotedblright
\DeclareTextCommand{\quotedblbase}{PU}{\9040\036} % quotedblbase
\DeclareTextCommand{\textdagger}{PU}{\9040\040} % dagger
\DeclareTextCommand{\textdaggerdbl}{PU}{\9040\041} % daggerdbl
\DeclareTextCommand{\textbullet}{PU}{\9040\042} % bullet
\DeclareTextCommand{\textellipsis}{PU}{\9040\046} % ellipsis
\DeclareTextCommand{\textperthousand}{PU}{\9040\060} % perthousand
\DeclareTextCommand{\textpertenthousand}{PU}{\9040\061} % pertenthousand
\DeclareTextCommand{\guilsinglleft}{PU}{\9040\071} % guilsinglleft
\DeclareTextCommand{\guilsinglright}{PU}{\9040\072} % guilsinglright
\DeclareTextCommand{\textfractionmark}{PU}{\9040\104} % fraction slash
\DeclareTextCommand{\texteuro}{PU}{\9040\254} % Euro
\DeclareTextCommand{\textcelsius}{PU}{\9041\003}
\DeclareTextCommand{\textnumero}{PU}{\9041\026}
\DeclareTextCommand{\texttrademark}{PU}{\9041\042} % trademark
%\DeclareTextCommand{\cyrlangle}{PU}{\9043\051}
%\DeclareTextCommand{\cyrrangle}{PU}{\9043\052}
```

⟨/puenc⟩

49.3 PU encoding, additions for VnTEX

This file is provided by Han The Thanh.

⟨*puvnenc⟩

```
\DeclareTextCommand{\abreve}{PU}{\81\003}
\DeclareTextCommand{\acircumflex}{PU}{\80\342}
\DeclareTextCommand{\dj}{PU}{\81\021}
\DeclareTextCommand{\ecircumflex}{PU}{\80\352}
```

```
\DeclareTextCommand{\ocircumflex}{PU}{\80\364}
\DeclareTextCommand{\ohorn}{PU}{\81\241}
\DeclareTextCommand{\uhorn}{PU}{\81\260}
\DeclareTextCommand{\ABREVE}{PU}{\81\002}
\DeclareTextCommand{\ACIRCUMFLEX}{PU}{\80\302}
\DeclareTextCommand{\DJ}{PU}{\81\020}
\DeclareTextCommand{\ECIRCUMFLEX}{PU}{\80\312}
\DeclareTextCommand{\OCIRCUMFLEX}{PU}{\80\324}
\DeclareTextCommand{\OHORN}{PU}{\81\240}
\DeclareTextCommand{\UHORN}{PU}{\81\257}

\DeclareTextCompositeCommand{\'}{PU}{a}{\80\341}
\DeclareTextCompositeCommand{\d}{PU}{a}{\9036\241}
\DeclareTextCompositeCommand{\`}{PU}{a}{\80\340}
\DeclareTextCompositeCommand{\h}{PU}{a}{\9036\243}
\DeclareTextCompositeCommand{\~}{PU}{a}{\80\343}
\DeclareTextCompositeCommand{\'}{PU}{\abreve}{\9036\257}
\DeclareTextCompositeCommand{\d}{PU}{\abreve}{\9036\267}
\DeclareTextCompositeCommand{\`}{PU}{\abreve}{\9036\261}
\DeclareTextCompositeCommand{\h}{PU}{\abreve}{\9036\263}
\DeclareTextCompositeCommand{\~}{PU}{\abreve}{\9036\265}
\DeclareTextCompositeCommand{\'}{PU}{\acircumflex}{\9036\245}
\DeclareTextCompositeCommand{\d}{PU}{\acircumflex}{\9036\255}
\DeclareTextCompositeCommand{\`}{PU}{\acircumflex}{\9036\247}
\DeclareTextCompositeCommand{\h}{PU}{\acircumflex}{\9036\251}
\DeclareTextCompositeCommand{\~}{PU}{\acircumflex}{\9036\253}
\DeclareTextCompositeCommand{\'}{PU}{e}{\80\351}
\DeclareTextCompositeCommand{\d}{PU}{e}{\9036\271}
\DeclareTextCompositeCommand{\`}{PU}{e}{\80\350}
\DeclareTextCompositeCommand{\h}{PU}{e}{\9036\273}
\DeclareTextCompositeCommand{\~}{PU}{e}{\9036\275}
\DeclareTextCompositeCommand{\'}{PU}{\ecircumflex}{\9036\277}
\DeclareTextCompositeCommand{\d}{PU}{\ecircumflex}{\9036\307}
\DeclareTextCompositeCommand{\`}{PU}{\ecircumflex}{\9036\301}
\DeclareTextCompositeCommand{\h}{PU}{\ecircumflex}{\9036\303}
\DeclareTextCompositeCommand{\~}{PU}{\ecircumflex}{\9036\305}
\DeclareTextCompositeCommand{\'}{PU}{i}{\80\355}
\DeclareTextCompositeCommand{\d}{PU}{i}{\9036\313}
\DeclareTextCompositeCommand{\`}{PU}{i}{\80\354}
\DeclareTextCompositeCommand{\h}{PU}{i}{\9036\311}
\DeclareTextCompositeCommand{\~}{PU}{i}{\81\051}
\DeclareTextCompositeCommand{\'}{PU}{o}{\80\363}
\DeclareTextCompositeCommand{\d}{PU}{o}{\9036\315}
\DeclareTextCompositeCommand{\`}{PU}{o}{\80\362}
\DeclareTextCompositeCommand{\h}{PU}{o}{\9036\317}
\DeclareTextCompositeCommand{\~}{PU}{o}{\80\365}
\DeclareTextCompositeCommand{\'}{PU}{\ocircumflex}{\9036\321}
\DeclareTextCompositeCommand{\d}{PU}{\ocircumflex}{\9036\331}
\DeclareTextCompositeCommand{\`}{PU}{\ocircumflex}{\9036\323}
\DeclareTextCompositeCommand{\h}{PU}{\ocircumflex}{\9036\325}
\DeclareTextCompositeCommand{\~}{PU}{\ocircumflex}{\9036\327}
\DeclareTextCompositeCommand{\'}{PU}{\ohorn}{\9036\333}
\DeclareTextCompositeCommand{\d}{PU}{\ohorn}{\9036\343}
\DeclareTextCompositeCommand{\`}{PU}{\ohorn}{\9036\335}
\DeclareTextCompositeCommand{\h}{PU}{\ohorn}{\9036\337}
\DeclareTextCompositeCommand{\~}{PU}{\ohorn}{\9036\341}
\DeclareTextCompositeCommand{\'}{PU}{u}{\80\372}
\DeclareTextCompositeCommand{\d}{PU}{u}{\9036\345}
```

```
\DeclareTextCompositeCommand{\‘}{PU}{u}{\80\371}
\DeclareTextCompositeCommand{\h}{PU}{u}{\9036\347}
\DeclareTextCompositeCommand{\~}{PU}{u}{\81\151}
\DeclareTextCompositeCommand{\’}{PU}{\uhorn}{\9036\351}
\DeclareTextCompositeCommand{\d}{PU}{\uhorn}{\9036\361}
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\DeclareTextCompositeCommand{\’}{PU}{y}{\80\375}
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\DeclareTextCompositeCommand{\~}{PU}{y}{\9036\371}
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\DeclareTextCompositeCommand{\d}{PU}{A}{\9036\240}
\DeclareTextCompositeCommand{\‘}{PU}{A}{\80\300}
\DeclareTextCompositeCommand{\h}{PU}{A}{\9036\242}
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\DeclareTextCompositeCommand{\’}{PU}{E}{\80\311}
\DeclareTextCompositeCommand{\d}{PU}{E}{\9036\270}
\DeclareTextCompositeCommand{\‘}{PU}{E}{\80\310}
\DeclareTextCompositeCommand{\h}{PU}{E}{\9036\272}
\DeclareTextCompositeCommand{\~}{PU}{E}{\9036\274}
\DeclareTextCompositeCommand{\’}{PU}{\ECIRCUMFLEX}{\9036\276}
\DeclareTextCompositeCommand{\d}{PU}{\ECIRCUMFLEX}{\9036\306}
\DeclareTextCompositeCommand{\‘}{PU}{\ECIRCUMFLEX}{\9036\300}
\DeclareTextCompositeCommand{\h}{PU}{\ECIRCUMFLEX}{\9036\302}
\DeclareTextCompositeCommand{\~}{PU}{\ECIRCUMFLEX}{\9036\304}
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\DeclareTextCompositeCommand{\d}{PU}{I}{\9036\312}
\DeclareTextCompositeCommand{\‘}{PU}{I}{\80\314}
\DeclareTextCompositeCommand{\h}{PU}{I}{\9036\310}
\DeclareTextCompositeCommand{\~}{PU}{I}{\81\050}
\DeclareTextCompositeCommand{\’}{PU}{O}{\80\323}
\DeclareTextCompositeCommand{\d}{PU}{O}{\9036\314}
\DeclareTextCompositeCommand{\‘}{PU}{O}{\80\322}
\DeclareTextCompositeCommand{\h}{PU}{O}{\9036\316}
\DeclareTextCompositeCommand{\~}{PU}{O}{\80\325}
\DeclareTextCompositeCommand{\’}{PU}{\OCIRCUMFLEX}{\9036\320}
\DeclareTextCompositeCommand{\d}{PU}{\OCIRCUMFLEX}{\9036\330}
\DeclareTextCompositeCommand{\‘}{PU}{\OCIRCUMFLEX}{\9036\322}
\DeclareTextCompositeCommand{\h}{PU}{\OCIRCUMFLEX}{\9036\324}
\DeclareTextCompositeCommand{\~}{PU}{\OCIRCUMFLEX}{\9036\326}
\DeclareTextCompositeCommand{\’}{PU}{\OHORN}{\9036\332}
\DeclareTextCompositeCommand{\d}{PU}{\OHORN}{\9036\342}
\DeclareTextCompositeCommand{\‘}{PU}{\OHORN}{\9036\334}
\DeclareTextCompositeCommand{\h}{PU}{\OHORN}{\9036\336}
```

```
\DeclareTextCompositeCommand{\~}{PU}{\OHORN}{\9036\340}
\DeclareTextCompositeCommand{\'}{PU}{U}{\80\332}
\DeclareTextCompositeCommand{\d}{PU}{U}{\9036\344}
\DeclareTextCompositeCommand{\`}{PU}{U}{\80\331}
\DeclareTextCompositeCommand{\h}{PU}{U}{\9036\346}
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\DeclareTextCompositeCommand{\'}{PU}{\UHORN}{\9036\350}
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\DeclareTextCompositeCommand{\~}{PU}{\UHORN}{\9036\356}
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\DeclareTextCompositeCommand{\~}{PU}{Y}{\9036\370}
```

⟨/puvnenc⟩

49.4 PU encoding, additions for Arabi

This file is provided and maintained by Youssef Jabri.

⟨∗puarenc⟩

```
\DeclareTextCommand{\hamza}{PU}{\86\041}% 0621;afii57409;ARABIC LETTER HAMZA
\DeclareTextCommand{\alefmadda}{PU}{\86\042}% 0622;afii57410;ARABIC LETTER ALEF WITH MADDA A
\DeclareTextCommand{\alefhamza}{PU}{\86\043}% 0623;afii57411;ARABIC LETTER ALEF WITH HAMZA A
\DeclareTextCommand{\wawhamza}{PU}{\86\044} % 0624;afii57412;ARABIC LETTER WAW WITH HAMZA AB
\DeclareTextCommand{\aleflowerhamza}{PU}{\86\045}% 0625;afii57413;ARABIC LETTER ALEF WITH HA
\DeclareTextCommand{\yahamza}{PU}{\86\046}% 0626;afii57414;ARABIC LETTER YEH WITH HAMZA ABOV
\DeclareTextCommand{\alef}{PU}{\86\047}% 0627;afii57415;ARABIC LETTER ALEF
\DeclareTextCommand{\baa}{PU}{\86\050}% 0628;afii57416;ARABIC LETTER BEH
\DeclareTextCommand{\T}{PU}{\86\051}% 0629;afii57417;ARABIC LETTER TEH MARBUTA
\DeclareTextCommand{\taa}{PU}{\86\052}% 062A;afii57418;ARABIC LETTER TEH
\DeclareTextCommand{\thaa}{PU}{\86\053}% 062B;afii57419;ARABIC LETTER THEH
\DeclareTextCommand{\jeem}{PU}{\86\054}% 062C;afii57420;ARABIC LETTER JEEM
\DeclareTextCommand{\Haa}{PU}{\86\055}% 062D;afii57421;ARABIC LETTER HAH
\DeclareTextCommand{\kha}{PU}{\86\056}% 062E;afii57422;ARABIC LETTER KHAH
\DeclareTextCommand{\dal}{PU}{\86\057}% 062F;afii57423;ARABIC LETTER DAL
\DeclareTextCommand{\dhal}{PU}{\86\060}% 0630;afii57424;ARABIC LETTER THAL
\DeclareTextCommand{\ra}{PU}{\86\061}% 0631;afii57425;ARABIC LETTER REH
\DeclareTextCommand{\zay}{PU}{\86\062}% 0632;afii57426;ARABIC LETTER ZAIN
\DeclareTextCommand{\seen}{PU}{\86\063}% 0633;afii57427;ARABIC LETTER SEEN
\DeclareTextCommand{\sheen}{PU}{\86\064}% 0634;afii57428;ARABIC LETTER SHEEN
\DeclareTextCommand{\sad}{PU}{\86\065}% 0635;afii57429;ARABIC LETTER SAD
\DeclareTextCommand{\dad}{PU}{\86\066}% 0636;afii57430;ARABIC LETTER DAD
\DeclareTextCommand{\Ta}{PU}{\86\067}% 0637;afii57431;ARABIC LETTER TAH
\DeclareTextCommand{\za}{PU}{\86\070}% 0638;afii57432;ARABIC LETTER ZAH
\DeclareTextCommand{\ayn}{PU}{\86\071}% 0639;afii57433;ARABIC LETTER AIN
\DeclareTextCommand{\ghayn}{PU}{\86\072}% 063A;afii57434;ARABIC LETTER GHAIN
\DeclareTextCommand{\tatweel}{PU}{\86\100}% 0640;afii57440;ARABIC TATWEEL
\DeclareTextCommand{\fa}{PU}{\86\101}% 0641;afii57441;ARABIC LETTER FEH
\DeclareTextCommand{\qaf}{PU}{\86\102}% 0642;afii57442;ARABIC LETTER QAF
\DeclareTextCommand{\kaf}{PU}{\86\103}% 0643;afii57443;ARABIC LETTER KAF
\DeclareTextCommand{\lam}{PU}{\86\104}% 0644;afii57444;ARABIC LETTER LAM
\DeclareTextCommand{\meem}{PU}{\86\105}% 0645;afii57445;ARABIC LETTER MEEM
\DeclareTextCommand{\nun}{PU}{\86\106}% 0646;afii57446;ARABIC LETTER NOON
\DeclareTextCommand{\ha}{PU}{\86\107}% 0647;afii57470;ARABIC LETTER HEH
```

```
\DeclareTextCommand{\waw}{PU}{\86\110}% 0648;afii57448;ARABIC LETTER WAW
\DeclareTextCommand{\alefmaqsura}{PU}{\86\111}% 0649;afii57449;ARABIC LETTER ALEF MAKSURA
\DeclareTextCommand{\ya}{PU}{\86\112}% 064A;afii57450;ARABIC LETTER YEH

\DeclareTextCommand{\nasb}{PU}{\86\113}% 064B;afii57451;ARABIC FATHATAN
\DeclareTextCommand{\raff}{PU}{\86\114}% 064C;afii57452;ARABIC DAMMATAN
\DeclareTextCommand{\jarr}{PU}{\86\115}% 064D;afii57453;ARABIC KASRATAN
\DeclareTextCommand{\fatha}{PU}{\86\116}% 064E;afii57454;ARABIC FATHA
\DeclareTextCommand{\damma}{PU}{\86\117}% 064F;afii57455;ARABIC DAMMA
\DeclareTextCommand{\kasra}{PU}{\86\120}% 0650;afii57456;ARABIC KASRA
\DeclareTextCommand{\shadda}{PU}{\86\121}% 0651;afii57457;ARABIC SHADDA
\DeclareTextCommand{\sukun}{PU}{\86\122}% 0652;afii57458;ARABIC SUKUN
```

Farsi

```
\DeclareTextCommand{\peh}{PU}{\86\176}% 067E;afii57506;ARABIC LETTER PEH
\DeclareTextCommand{\tcheh}{PU}{\86\206}% 0686;afii57507;ARABIC LETTER TCHEH
\DeclareTextCommand{\jeh}{PU}{\86\230}% 0698;afii57508;ARABIC LETTER JEH
\DeclareTextCommand{\farsikaf}{PU}{\86\251}% 06A9???;afii?????;FARSI LETTER KAF
\DeclareTextCommand{\gaf}{PU}{\86\257}% 06AF;afii57509;ARABIC LETTER GAF
\DeclareTextCommand{\farsiya}{PU}{\86\314}% 06CC;afii?????;FARSI LETTER YEH

\DeclareTextCommand{\ZWNJ}{PU}{\9040\014}% 200C;ZWNJ%
\DeclareTextCommand{\noboundary}{PU}{\86\325}% 200D;ZWJ
```

⟨/puarenc⟩

50 End of file hycheck.tex

```
⟨*check⟩
\typeout{}
\begin{document}
\end{document}
⟨/check⟩
```

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