

The **interfaces*** package

interfaces with keys for other packages

FC

2010/11/26 – version 2.4 – release candidate
pgf v2.1 / pgf v2.0 compatible

Abstract

interfaces provides a small number of user friendly macros to access features implemented in frequently used packages. Most of the macros are base on **pgfkeys**, hence the “key=value” syntax.

interfaces is mainly based on **pgfkeys**¹ and **scrfile** for its different modules are loaded \AfterPackage. ϵ -**TEX** is required of course... Each interface is actually made as a separate module, which is loaded automatically after its *master package*. Adding \usepackage{**interfaces**} into your document preamble will make all modules active (*ie.* they will be loaded or not, depending on your document preamble). If you prefer not to use all modules, you can load them separately as a package, for example, type: \usepackage{**interfaces-titlesec**} *after* \usepackage{**titlesec**}. A better way is to add \usepackage{**interface-base**} to your preamble, and then: \LoadInterface{**titlesec,tocloft**} indifferently before or after \usepackage{**titlesec,tocloft**}. Another possibility to restrict the modules is to give them as options for the main package: \usepackage[**titlesec,tocloft**]{**interfaces**}.

interfaces-base is a mandatory “module”. It loads **interfaces-scrfile**, **interfaces-etoolbox**² and **interfaces-pgfkeys**: those are the *system-layer* of **interfaces**.

~~~~~ Example ~~~~~

```
\pagesetup[document]{%
    rules=.5pt,
    foot/left/odd=\arabic{page},
    foot/right/even=\arabic{page}/\pageref{LastPage},
    head/font=\color[gray]{.85}\bfseries\small,
    head/left/even=\leftmark,
    head/left=\thefirstmarks{MiniSection},% interfaces-marks
}
\pagesetup[plain]{% for chapters...
    pagestyle=document,% preloaded settings
    head=,
    foot/left/odd = \roman{page},
    norules, head/rule=.4pt
    head/center=This is the title,
}
\sectionformat)section[hang]{
    label=\arabic{section},
    labelsep=,
    font=\bfseries\Large,
    bookmark={bold,color=blue},% interfaces-bookmark
    top=6pt plus3pt minus2pt,
    bottom=3pt plus2pt,
    break=\marksthe{section}{lastsectiontoc},% interfaces-hypbmsec
    mark=\marksthe{section}{#1},% interfaces-marks
}
\sectionformat)subsection[hang]{
    label=, labelsep=,
    font=\bfseries,
    bookmark=italic,
    top*=1.2,% a 120% scaling
    bottom+=0pt plus4pt,% add to previous value
    mark=\markright{#1},
}

\sectionformat)Minisection% new sectionning command
class=straight[\subparagraph],
shape=block,
label=,
top=3pt plus2pt, bottom=1pt,
font=\bfseries\sffamily,
bookmark=off,% or false or none
break=\allowbreak,
mark=\marksthe{MiniSection}{#1},% see interfaces-marks
}
\bottomtitles=.2\textheight
\tocsetup{
    depth=3, title=Contents, pagenumbers=on,
    pagestyle=plain,% first page style: tocloftpagestyle
    title/top=1.5ex plus.5ex,
    title/bottom=0pt,
    section/indent=1em,
    section/number/width=1.5em,
    section/font+\larger\bfseries,% append to previous setting
    section/leaders,section/dotsep,
    subsection/indent=2em,
    subsection/number/width=2.5em,
    subsubsection/font=\scriptsize,
    subsection/leaders,subsection/dotsep,% default values
    subsubsection/pagenumbers=off,% no page numbers
    subsubsection/dotsep=% no leader
    columns=2,% same as twocolumns
    columns/sep=.5em,
    columns/rule/width=1pt,columns/rule/color=blue,
    label=toc,% gives a label to the t.o.c.
    bookmark={text=Contents,bold},% interfaces-bookmark
}
\tableofcontents

\mainmatter \pagestyle{document}
```

This documentation is produced with the +DocStrip+ utility.

- To get the documentation, run (thrice): pdflatex interfaces.dtx
- To get the index, run: makeindex -s gind.ist interfaces.idx
- To get the package, run: etex interfaces.dtx

The .dtx file is embedded into this pdf file thank to embedfile by H. Oberdiek.

1. **pgfkeys**: CTAN:graphics/pgf/base/generic/pgf/utilities

2. All macros in **interfaces-etoolbox** are defined with \providecommand except \removefromstart which is used by \repeatcell.

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# 1 Interface LATEX

```
\changefont{ encoding |enc = changes \fontencoding
            family |fam = changes \fontfamily
            series |ser = changes \fontseries
            shape |sha = changes \fontshape
            size |size* |size+ |size- = changes the font size (default unit is pt)
            baselineskip |baselineskip* + - |skip = changes the \baselineskip for the font
            linespread |linespread* + - |spread = changes the line spread (a real value) }
```

Example: adds 5pt to the font size (pt is added if not specified) and scale the linespread by 130%:

```
\changefont{ size+ = 5, spread* = 1.3} (\selectfont is included in the macro).
```

If a key is not specified, the current value remains.

Finally, \changefont is compatible with hyperref thank to \pdfstringdefDisableCommands.

# 2 Interface TikZ ( pgfmanual )

```
\usetikz { basic=..., loads tikz with libraries calc, arrows, scopes and backgrounds
           all=..., loads tikz with all packages, pgf-modules and TikZ-libraries
           any other key=..., loads tikz and the specified package, module or library
                         using \usepackage, \usepgfmodule or \usetikzlibrary }
```

`\usetikz` is a facility provided to load pgf, tikz, pgf-modules, and tikz-libraries, without the need to know if you must use `\usepackage` or `\usepgfmodule` or `\usetikzlibrary`.

`\usetikz` does not parse options. If you are used to load pgf with option (f.ex. `version=0.96`), please use the syntax:

```
\PassOptionsToPackage{version=0.96}{pgf}
```

~~~~~ MEMO ~~~~~

| TikZ/pgf package | pgfmodules | TikZ libraries | |
|------------------|------------|--------------------------|---------------------------|
| pgf | matrix | arrows | decorations.pathreplacing |
| pgfmath | plot | chains | decorations.shapes |
| pgfcalendar | | er | decorations.text |
| pgfplots | | scopes | decorations.markings |
| pgfpages | | snakes | decorations.fractals |
| tikz | | shapes | decorations.footprints |
| | | shapes.misc | positioning,trees |
| | | shapes.geometric | automata |
| | | shapes.arrows | patterns |
| | | shapes.multipart | fadings |
| | | shapes.callouts | shadows |
| | | shapes.symbols | through |
| | | shapes.gates.logic.US | backgrounds |
| | | shapes.gates.logic.IEC | petri |
| | | decorations | fit |
| | | decorations.pathmorphing | mindmap |
| | | | folding |
| | | | plothandlers |
| | | | plotmarks |
| | | | calc |
| | | | matrix |

sorry for the blank cell, but I didn't get out with `colortbl` and the `\multicolumn` entry...

3 Interface ↗ **titlesec** : \sectionformat

```
\sectionformat{\section} { class=..., page|top|straight[\sup-level]
    shape=..., hang|block|display|runin|leftmargin|rightmargin|
        drop|wrap|frame|runinifempty
    font|format=..., label=..., labelsep|sep=...
        left=..., right=..., top=..., bottom=...
    before=..., after=...
    mark=..., break=..., thesection=..., }
```

`\sectionformat` is a pgfkeys-command for replacement of both `\titleformat` and `\titlespacing`. If a key is not given, its value remains the same while with `\titleformat` or `\titlespacing`, you must specify all values in a rigid order... Moreover, `\sectionformat` can be used concurrently with `\titleformat` and `\titlespacing` (although `\sectionformat` is deemed more comfortable, this allows to quickly modify some files written without interfaces.)

Keys corresponding to TeX code (`font`, `before` or `after`) are associated with starred keys and `+ keys`: they append their content to the previous value. Ex: `font+={\larger}` adds `\larger` to the previous settings.

For dimensions or skips, the **+** key adds, the **-** key subtract and the ***** key scales.

| MEMO | | |
|--|-------------------------------|--|
| class | name of the class | <p><code>page</code>=like standard \part
 <code>top</code>=like standard \chapter
 <code>straight</code>=like standard \section etc.
 example: \sectionformat\subchapter{class=straight[\chapter]}</p> |
| shape | shape | <p><code>hang</code>=hanging label (like \section)
 <code>block</code>=paragraph without formatting (for centered titles)
 <code>display</code>=like standard \chapter
 <code>runin</code>=like standard \paragraph
 <code>leftmargin</code>=left margin
 <code>rightmargin</code>=right margin
 <code>drop</code>=wraps the text around the title (the first paragraph should be longer than the title, otherwise, they overlap)
 <code>wrap</code>=like <code>drop</code> but the space reserved for the title is variable
 <code>frame</code>=like <code>display</code>+puts the title in frame
 <code>runinifempty</code>=<code>hang</code> but no label if the title is empty</p> |
| <code>font</code> = <code>format</code> | format for title | applied to the label and the title |
| <code>label</code> | title label | ex: \arabic{section} |
| <code>sep</code> ≡ <code>labelsep</code> | space between label and title | |
| <code>left</code> | left margin | a glue: horizontal space before |
| <code>right</code> | right margin | a glue: horizontal space after |
| <code>top</code> | vertical space before | a glue: vertical space before |
| <code>bottom</code> | vertical space after | a glue: vertical space after |
| <code>mark</code> | macro with 1 parameter | ex \sectionmark: redefines \...mark#1... (the argument is the title) |
| <code>break</code> | parameterless macro | ex \sectionbreak to be executed just before the section command |
| <code>thesection</code> | toc and ref labels | redefines \thesection
\thesection, \thesubsection etc.. are used to print references and the label in the table of contents |
| <code>before</code> | code before title body | |
| <code>after</code> | code after title body | |

If the bookmark package is loaded, with `interfaces-bookmark`, the following keys are defined for each section:

| | | |
|------------------------|-----------------------|---|
| bookmark/bold | bold bookmark text | the text of the bookmark for that sectionning command will be bold |
| bookmark/italic | italic bookmark text | the text of the bookmark for that sectionning command will be in <i>italic</i> |
| bookmark/color | colored bookmark text | the text of the bookmark for that sectionning command will be colorized |
| bookmark/off | disable the bookmark | no bookmark for that sectionning command alternatively you may set bookmark/level to a huge value... |
| bookmark/style | use a <i>style</i> | the <i>style</i> must be previously declared with \bookmarkdefinestyle |
| bookmark/level | level of the bookmark | defines \toclevel@{sectionname}, see bookmark documentation |

The syntax: `\sectionformat\subsection{bookmark={bold,italic,color=green,on,view=FitB}}` also works.

→ Key bookmark is an example of a key defined with the handler `./is` multiple choice.

The starred keys `bold*`, `italic*` and `color*` are also provided. For example:

```
\sectionformat\section{
    after=\sectionformat\subsection{bookmark/color*=red}
}
```

makes the bookmarks corresponding to the first subsection in each section to be red. If you ascertain that there is no bookmark between the one corresponding to the section and the one corresponding to its first subsection, then this is the same as: “`after=\bookmarksetup[color*=red]`”.

~~~~~ EXAMPLE ~~~~~

---

|                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| <pre>\sectionformat\section[hang]{%     font=\bfseries\scshape,     label=\Roman{chapter}\textbullet\arabic{section},     bottom=1ex plus.4ex minus.2ex,     top+=3pt,     mark=\markright{\#1},% =&gt; this defines \def\sectionmark{\markright{\#1}}     break=\goodbreak%=&gt; this defines \def\sectionbreak{\goodbreak}     thesection=\Roman{chapter}.\arabic{section} } % redefines \def\thesection{...}</pre> | this is the same as: <code>shape = hang</code> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|

---

`titlesec` provides *extended settings* for numberless (*i.e.* starred) sections with the syntax:

```
\titleformat{name=\section, numberless}{...}
```

One swallow does not a summer make, `interface-titlesec` does not provide this feature in a `key=value` stuff but just type:

```
\sectionformat\section*{ key=value }
```

to give to your `\section*` command a special format. Keys `label` and `labelsep` are not ignored, this means that `\section*` can be defined in a way it produces a numbered section! Albeit, this would be weird because the `\section` counter is not updated for starred sections...

Presently, `\sectionformat` does not implement the *extended settings* of `titlesec` for odd and even pages.

However, it is always possible to use `\sectionformat` concurrently with `\titleformat` and `\titlespacing`. A better way to use different settings for odd and even pages is the use of `\ifthispageodd` from the KOMA-Script classes, or the features provided by `changepage.sty`, which is almost the same: actually `titlesec` test oddity of the `page` counter (*i.e.* `\count` register nr 0) while oddity of `\pageref` should be tested... Hence the decision I came not to implement different settings for odd and even pages in `\sectionformat`.

```
\bottomtitles{<glue|percentage of \textheight>}
```

This sets the value of `\bottomtitlespace` (see `titlesec` documentation):

```
\bottomtitles{.2}           set \bottomtitlespace to .2\textheight
\bottomtitles=.2\textheight is the same
```

You can set a negative value: `\bottomtitles = -1` to allow bottom titles.

## 4 Interface ↗ hyperref

```
\raisedhyperdef[<raised dimen>]{<category>}{<name>}{<text>}
```

Package `hyperref` provides `\hyperdef` and `\Hy@raisedlink` but no easy way to insert a “raised link” with `\hyperdef` (or `\hypertarget`).

`\raisedhyperdef` can be used exactly like `\hyperdef`, but the pdf-anchor will be raised of the specified dimension.

## 5 Interface ↗ bookmark

A few new keys appear with `interfaces` for the command `\bookmarksetup`:

```
\bookmarksetup { bold*=..., will make the bookmark text bold, but only for the very next bookmark
                 italic*=..., idem for italic
                 color*=..., idem for color: the previous color will be restored after the next bookmark
                 disable=..., will disable the bookmarks (the same as \bookmarksetup{depth=-2})
                 disable*=..., will disable only the very next bookmark }
```

Furthermore the following code:

```
\sectionformat\section{bookmark={bold,color=blue}}
\bookmarksetup{color*=red}
\section{A lovely red, bold bookmark here!}
\section{And the following bookmark is blue and bold}
```

will produce a bookmark with attributes: `color=red, bold=true`. In other words, the starred keys of `\bookmarksetup` overwrite the “default” settings of `\sectionformat` for the very next bookmark.

*Note that this code requires `titlesec`, `bookmark`, `interfaces-titlesec` and `interfaces-bookmark`.*

Three new keys are added to the `\bookmark` command:

```
\bookmark{ pageref = the destination of the bookmark is the page referenced
           ref = the destination of the bookmark is the anchor associated to the reference
           atend = the bookmark will be inserted at the end of the document }
```

I admit those keys will not be used very often... but imagine you want to put a bookmark at the end, which points to the table of contents, then:

```
\bookmark[ref=TableOfContents,atend]{Back To Contents}
```

Provided that the label `TableOfContents` has been defined, for example with `\tocsetup`, if `tocloft` and `interfaces-tocloft` are loaded:

```
\tocsetup{label=TableOfContents} \tableofcontents
```

The `atend` key requires of course that the package `bookmark` was loaded with the `[atend]` option (otherwise, `bookmark.sty` gives a warning).

## 6 Interface `hypbmsec`

The features provided by `interfaces-hypbmsec` are now independant of `titlesec` and `interfaces-titlesec`.

Package `hypbmsec` provides extended sectionning commands with the syntax:

```
\section{out}[toc]{title}      or      \section[toc](out){title}
```

(`out`) is used for the bookmark (outline)

Where: `[toc]` for the table and contents and the marks

`{title}` to typeset the section title in the document

Internally, `hypbmsec` defines `\hbs@bmstring` (the string used for the bookmark entry) and `\hbs@tocstring` (the string used for the table of contents and the marks).

`interfaces` takes advantage of this and defines:

|                                   |                                                                                               |
|-----------------------------------|-----------------------------------------------------------------------------------------------|
| <code>\lastsectiontitle</code>    | expands to the title of the last <code>\section</code>                                        |
| <code>\lastsectionbookmark</code> | expands to the text of the bookmark for the last <code>\section</code>                        |
| <code>\lastsectiontoc</code>      | expands to the entry of the last <code>\section</code> in the table of contents               |
| <code>\lastsectionanchor</code>   | expands to the anchor name of the last <code>\section</code> if <code>hyperref</code> is used |

Macros for each sectionning command are defined:

|                                  |                                      |                                      |
|----------------------------------|--------------------------------------|--------------------------------------|
| <code>\lastparttitle</code>      | <code>\lastchaptertitle</code>       |                                      |
| <code>\lastsectiontitle</code>   | <code>\lastsubsectiontitle</code>    | <code>\lastsubsubsectiontitle</code> |
| <code>\lastparagraphtitle</code> | <code>\last subparagraphtitle</code> |                                      |

with their `...bookmark` and `...toc` counterparts.

Assignment to those macros is automatic. More precisely, `\lastsectiontitle` is defined **after** `\sectionbreak` and **before** `\sectionmark`: this means that in the fields `after` or `mark` of `\sectionformat`, `\lastsectiontitle` has been updated yet. While in the fields `before`, and `break`, `\lastsectiontitle` is not yet updated. (For chapters, this is the same if `titlesec` formats the chapter titles, *i.e.* if `\sectionformat\chapter` or `\titleformat\chapter` has been invoked. Otherwise, `\lastchaptertitle`, `\lastchapterbookmark` and `\lastchaptertoc` are set at `\stepcounter{chapter}`).).

Values are automatically reset to `\relax` when a section of a superior level is created.

This feature has been implemented essentially to make the use of a `\mark` command at `\sectionbreak` easier. Mark at `\sectionbreak` is important to get the correct behaviour for marks described in `interface-marks` (page 10 under `\ifmarksequal`). With this feature, when a new `\section` is created, `\lastsubsection` is reset to `\relax` therefore, `\marksthecs{\subsection}{\lastsubsection}` will not mark anything.

Another possibility is show in this document: the header is clickable and has been defined with:

```
\sectionformat\section{
    mark=\marksthe{section}{#1}
    \marksthecs{sectionanchor}{lastsectionanchor}
}

\pagesetup{
    head/right=\hyperref{}{}{\thefirstmarks{sectionanchor}}
                {\thefirstmarks{section}}
}
```

## 7 Interface ☞ `tocloft` : `\tocsetup`, `\lofsetup` and `\lotsetup`

Setting the keys overwrites the previous value, unless the `+` key (append code/add for dimensions), the `-` key (subtract) or the starred-key`*` (scale dimensions) is used. `\tocsetup` settings apply to `\tableofcontents` and also to `\shorttableofcontents` (package `shorttoc`). `\tocsetup` can be invoked more than once in a document...

|                                                                                                                                                                                                                                           |                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>\tocsetup{</code>                                                                                                                                                                                                                   | <code>depth = \setcounter{tocdepth}</code> This is a L <sup>A</sup> T <sub>E</sub> X rather than <code>tocloft</code> 's ...                                     |
|                                                                                                                                                                                                                                           | However with <code>interfaces</code> you can change the t.o.c. depth anywhere inside your document, just like bookmarks depths (two runs are required)           |
| <code>title   contentsname = redefines \contentsname</code>                                                                                                                                                                               |                                                                                                                                                                  |
| <code>title/top   title/top+   title/top-   title/top* = vertical space before the title (set   add   subtract   scale)</code>                                                                                                            |                                                                                                                                                                  |
| <code>title/bottom   title/bottom+ etc. = vertical space after the title</code>                                                                                                                                                           |                                                                                                                                                                  |
| <code>title/font   title/font* = the title font (set   append code)</code>                                                                                                                                                                |                                                                                                                                                                  |
| <code>title/after   title/after* = hook to execute just after the title (\cftaftertoctitle...)</code>                                                                                                                                     |                                                                                                                                                                  |
| <code>parskip   parskip+ etc.   parsep = modifies (or add to) \cftparskip</code>                                                                                                                                                          |                                                                                                                                                                  |
| <code>dotsep = modifies \cftdotsep</code> if no dimen is specified, <i>mu</i> is assumed, otherwise, conversion to $\mu \approx 1em/18$ is supplied. Default value is <i>4.5mu</i> and blank value is the same as <code>\cftnodots</code> |                                                                                                                                                                  |
| <code>dot = modifies \cftdot, the dot used for leaders produced by \cftdotfill</code>                                                                                                                                                     |                                                                                                                                                                  |
| <code>pagestyle = page style for the first page (\tocloftpagestyle)</code>                                                                                                                                                                |                                                                                                                                                                  |
| <code>mark = the mark command: \cftmarktoc</code>                                                                                                                                                                                         |                                                                                                                                                                  |
| <code>example: \chaptermark\contentsname</code>                                                                                                                                                                                           |                                                                                                                                                                  |
| <code>before   before*   after   after* = hooks to execute before or after the command \tableofcontents</code>                                                                                                                            |                                                                                                                                                                  |
| <code>twocolumns   columns   multicol = twocolumns=true is the same as columns=2 Makes a multicolumn table of contents. Package <code>multicol</code> is required!</code>                                                                 |                                                                                                                                                                  |
| <code>columns/sep   columns/sep+   columnsep etc. = sets (or add) a &lt;dimen&gt; to \columnsep</code>                                                                                                                                    |                                                                                                                                                                  |
| <code>columns/rule   columns/rule+   columnseprule etc. = sets (or add) a &lt;dimen&gt; to \columnseprule</code>                                                                                                                          |                                                                                                                                                                  |
| <code>columns/color   columnseprulecolor = modifies \columnseprulecolor</code>                                                                                                                                                            |                                                                                                                                                                  |
| <code>multicols   multicols+ etc. = modifies (or add) a &lt;glue&gt; to \multicols</code>                                                                                                                                                 |                                                                                                                                                                  |
| <code>\multicols is the space added before and after <code>multicol</code> environment. Its default value is <code>0pt plus 4pt minus 3pt</code>.</code>                                                                                  |                                                                                                                                                                  |
| <code>multicols/begin   twocolumns/before = hooks just after \begin{multicols} ...</code>                                                                                                                                                 |                                                                                                                                                                  |
| <code>multicols/end   twocolumns/after = ... and before \end{multicols}</code>                                                                                                                                                            |                                                                                                                                                                  |
|                                                                                                                                                                                                                                           | <code>label = the label for reference to the table of contents</code>                                                                                            |
|                                                                                                                                                                                                                                           | <code>ref = the reference printed by \ref when referencing the table of contents (default is \contentsname. In any case, \nameref prints \contentsname.).</code> |
|                                                                                                                                                                                                                                           | <code>bookmark/text = the bookmark text for the table of contents (if empty, no bookmark is set)</code>                                                          |
| <code>bookmark/bold   bookmark/italic   bookmark/color = the bookmark style for the table of contents</code>                                                                                                                              |                                                                                                                                                                  |
| <code>bookmark/level = the bookmark level: either a number or <code>section</code> or <code>chapter</code></code>                                                                                                                         |                                                                                                                                                                  |
|                                                                                                                                                                                                                                           | Default is chapter, or section if the class does not provide chapters.                                                                                           |
|                                                                                                                                                                                                                                           | }                                                                                                                                                                |

`bookmark` key and sub-keys are available only if the package `bookmark` is loaded with `interfaces-bookmark`.

The following keys apply to each section levels. Section level names are : `part` / `chap` or `chapter` / `sec` or `section` / `subsec` or `subsection` / `subsubsec` or `subsubsection` / `para` or `paragraph` / `subpara` or `subparagraph` / `fig` or `figure` / `subfig` or `subfigure` / `tab` or `table` / `subtab` or `subtable`. ¶ may be one of those names (see `tocloft` documentation).

|                                                                                                                                             |   |
|---------------------------------------------------------------------------------------------------------------------------------------------|---|
| <code>\tocsetup{</code>                                                                                                                     |   |
| <code>\top   \top+   \skip   \bforeskip = modifies (or add to) the vertical &lt;glue&gt; before an entry</code>                             |   |
| <code>\indent   \indent+   \indent-   \indent* = modifies (or add etc.) the indentation of the entry</code>                                 |   |
| <code>\font   \font* = the font of the ¶ section title</code>                                                                               |   |
| <code>\numberwidth   numberwidth+   numwidth = modifies the space allowed to typeset the title numbers</code>                               |   |
| <code>\numberbefore   numberbefore*   presnum = code before the section number (see pseudo code below)</code>                               |   |
| <code>\numberafter   numberafter*   aftersnum = code after the section number (see pseudo code below)</code>                                |   |
| <code>\titlebefore   titlebefore*   aftersnum = code before the title (ie. after the section number box)</code>                             |   |
| <code>\leader   \leaders = modifies the leader: the default is \cftdotfill{\cftdotsep}</code>                                               |   |
| <code>\dotsep = the space (in <i>mu</i>) between dots in the leader. Default is \cftdotsep and blank value is the same as \cftnodots</code> |   |
| <code>\pagefont   \pagefont   \pagenumberfont = modifies the font used to typeset the page number</code>                                    |   |
| <code>\pageafter   \pageafter   \pagenumberafter   \afterpnum = macro expanded after the page number is typeset</code>                      | } |

~~~~~ MEMO ~~~~~

numbered entries are typeset with this pseudo code:

```
{\cftXfont {\cftXpresnum SNUM\cftXaftersnum\hfil} \cftXaftersnumb TITLE}%
{\cftXleader}{\cftXpagefont PAGE}\cftXafterpnum\par
```

and for not numbered entries:

```
{\cftXfont TITLE}{\cftXleader}{\cftXpagefont PAGE}\cftXafterpnum\par
```

\lofsetup and \lotsetup behave the same.

\listofsetup{<list-name>}{<key=value>}

This command is provided to setup the parameters of user-defined lists created with tocloft's \newlistof and printed with \listofX (where X is the name given to the list). The keys are the same as ~\tocsetup, but there is no sub-keys for section, subsection etc..

8 Interface ☞ fancyhdr : \pagestyle

| | | |
|--|----------------------------|---|
| \pagestyle[<pagestyle-name>]{ | | |
| norule | | set \headrulewidth and \footrulewidth to 0pt |
| rule rule/width[* + -]=..., | rule/color=..., | set \headrulewidth and \footrulewidth to a given value |
| headrule=..., | rule/font=..., | To change the rule font/color |
| head/rule/width=..., | footrule=..., | redefines \headrule and \footrule (no value restores default) |
| head/rule/color=..., | foot/rule/width=..., | dimensions |
| head/rule/font=..., | foot/rule/color=..., | for head and foot rules separately |
| | foot/rule/font=..., | <i>idem</i> |
| head=..., | foot=..., | header and footer (\fancyhead\fancyfoot) |
| left=..., | center=..., | right=..., by position |
| head/left=..., | head/center=..., | head/right=..., for one side documents |
| foot/left=..., | foot/center=..., | foot/right=..., <i>idem</i> |
| head/left/even=..., | head/left/odd=..., | for two side documents |
| etc. | etc. | <i>etc.</i> |
| foot/right/even=..., | foot/right/odd=..., | foot/inner=..., inner is an alias for right/even, left/odd |
| inner=..., | head/inner=..., | foot/outer=..., outer is an alias for left/even, right/odd |
| outer=..., | head/outer=..., | changes \fancyhfoffset |
| offset=..., | foot/offset=..., | |
| head/offset=..., | right/offset=..., | |
| left/offset=..., | | for two side documents |
| head/left/even/offset=..., | head/left/odd/offset=..., | |
| etc. | etc. | |
| etc. | etc. | for two side documents |
| foot/right/even/offset=..., | foot/right/odd/offset=..., | |
| inner/offset=..., | head/inner/offset=..., | inner is an alias for right/even, left/odd |
| outer/offset=..., | head/outer/offset=..., | outer is an alias for left/even, right/odd |
| pagestyle=..., | | load the settings of another page style |
| | | } |

\pagestyle* [<pagestyle-name>]{key = value}

\pagestyle resets all headers and footers, rules etc. and modifies the current (active) page style depending on the key=value pairs. \pagestyle[<page-style>] defines (or redefines) a page style, starting from default values. When a key is specified with no value, the default is used (f. ex. head/rule will be .4pt and foot/rule will be 0pt).

\pagestyle* does not reset current values: keys that are not specified remains the same.

\pagestyle* [<page-style>] defines or redefines <page-style>; the normal form starts from scratch, while the starred form \pagestyle* keeps previous values if they are not overwritten, and if the <page-style> exists, of course.

foot/left/odd is the same as odd/foot/left etc. but twoside option is not checked... Even pages are ignored in oneside documents: this is L^AT_EX, not fancyhdr nor **interfaces-fancyhdr**.

As usual, for dimensions or glues, +, - and * keys are provided for addition, subtraction and scaling . And for code (font keys) the + and * keys are provided: both append their content to the previous value.

9 Interface marks

`interface-marks` provides a few macros to make easier the use of ε -TeX `\marks` registers. ε -TeX defines 32 768 marks registers, making the use of them far more comfortable than “old” L^AT_EX `\markboth`, `\markright`, `\leftmark` and `\rightmark`. Who gets the correct – I mean *expected* – result with such commands ? Not me, I can say !

```
\marksthe{{named-mark}}{<content>}
\marksthecs{{named-mark}}{<cs-name>}
```

`\marksthe{{section}}{<content>}` will mark `<content>` into a mark register referenced by the control sequence `\marks@{section}`. **<content> is not expanded** (You can expand before `\marksthe` if you need it).

If the mark `\marks@{section}` is not defined, then a new mark register is allocated (with `etex-\newmarks`).

`\marksthecs{{subsubsection}}{<cs-name>}` will similarly mark the unexpanded content of `\cs-name` by means of the marks register `\marks@{subsubsection}`. `<cs-name>` is really the ***name of the control sequence***, not the control sequence itself. If `\cs-name` is undefined or `\relax`, nothing is marked, making `\marksthecs` suitable to use with `\lastsectiontitle etc.. at \sectionbreak` (see `interfaces-hypbmsec` p. 7).

```
\thefirstmarks{{named-mark}}EXPANDABLE
\thebotmarks{{named-mark}}EXPANDABLE
\thetopmarks{{named-mark}}EXPANDABLE
```

`\thefirstmarks{{chapter}}` expands to `\firstmarks\marks@{chapter}` (this is expandable in exactly one step of expansion), *i.e.* either the content of the first invocation of `\marksthe{{chapter}}` on the current page, if `\marks` was used on the current page, or the last invocation of `\marks` if no marks occurs on the current page.

`\thebotmarks{{chapter}}` expands to `\botmarks\marks@{chapter}` *i.e.* the content of the last invocation of `\marksthe{{chapter}}` (the most recent `\marks`).

`\thetopmarks{{chapter}}` expands to `\topmarks\marks@{chapter}` and this is the content of `\botmarks` at the time TeX shipped out the last page.

If there is no mark or if the mark register does not exist, expansion is null (*i.e.* nothing is done).

Those commands can be used in headers and footers, f.ex:

```
\sectionformat{section}
  mark=\marksthe{{section}}{\arabic{section}\hskip.4em\textrandom\hskip.4em#1}
\pagesetup{head/right=\thefirstmarks{{section}}}
```

```
\gettmarks\firstmarks|\botmarks|\topmarks{{named-mark}}{\control-sequence}
\getthefirstmarks{{named-mark}}{\control-sequence}
\getthebotmarks{{named-mark}}{\control-sequence}
\getthetopmarks{{named-mark}}{\control-sequence}
```

You may wish to retrieve the values of `\firstmarks`, `\botmarks` or `\topmarks` into a macro. This is the purpose of these commands: `\control-sequence` is defined as a parameterless macro whose replacement text is the content of the specified marks register.

If the marks register `\marks@{named-mark}` does not exist, the meaning of `\control-sequence` is undefined.

```
\ifmarksequal{\firstmarks}{\topmarks}{named-mark}{<true>}{<false>}
```

Pretty often, we want to compare the botmarks with firstmarks or the topmarks, to adapt the header and/or footer in case those marks are equal or different, *i.e.* in case the page contains a new section title or not:

`\ifmarksequal` expands conditionnally code `{<true>}` only if the specified marks register to compare are equal, otherwise `{<false>}`.

- `\firstmarks = \botmarks` \Leftrightarrow there is at most one section title on the current page;
- `\topmarks = \botmarks` \Leftrightarrow there is no section title on the current page;
- `\firstmarks = \topmarks` \Leftrightarrow the last section title continues on the current page.

Those assertions are true only if you mark the section title at `\sectionmark` and at `\sectionbreak`: this is easy when using `interfaces-hypbmsec`: `\sectionformat{subsection}{break=\marksthecs{{subsection}}{\lastsubsectiontoc}}`.

If the marks register `\marks@{named-mark}` does not exist, the `{<false>}` part is expanded.

10 Interface ↗ `makecell` : `\repeatcell`

`makecell` provides `\eline`, `\nline`, `\Xrows` to fill a table with empty cells, or repeated rows.

`interfaces` extends the possibility with `\repeatcell`. Although it is of general use, `\repeatcell` should be used softly in order to keep the `.tex` document intelligible (see the examples below).

While repeating cells, `\repeatcell` can also make calculations with:

- `\numexpr`,
- `\pgfmath` ($\sim \usepackage{pgfmath}$ required in preamble)
- `$$\FPeval$` (\usepackage{fp} required in preamble) \Rightarrow use `round` to display the results!

Inside formulas `\row` expands to the current row, `\column` to the current column number (`\row` and `\column` are 1-based and relative to `\repeatcell`).

`\countvalues{<comma separated list>}`

`\countvalues{<comma separated list>}` expands to the number of values in the list. This is also the number of steps a \LaTeX `\@for` loop would do on the list: in other words, **empty values are counted**. `\countvalues` is provided to allow you to adjust automatically the number of columns of a tabular, depending on your data, with the `*` operator: `\begin{tabular}{*{\countvalues{list}}{c}}`.

`\countvalue` is purely expandable in one expansion step. The `<comma separated list>` is expanded once, exactly like in \LaTeX `\@for` (*hint*: you can put `\@empty` before, to avoid expansion).

`\repeatcell[<alignment>]{<columns>}{<text>}` \leftarrow number of columns or comma separated list of values
`<text>` = the text to be inserted (repeated) in each cell
`` = the font inside the cell
`<rows>` = the number of rows (default is 1 row) or a comma separated list of value:
`{one, two, three, four, etc.}` Empty values **are not** ignored.
`<cr|end>` = the end-of-row sequence (default is `\backslash` but you may want `\c\r\c\r\hline` or
`\tabularnewline...`)
end of row sequence is never inserted after the last row.
`text/row1 | text/row2 | text/row3 etc.` = If you want to change the text on the specified rows
`text/col1 | text/col2 | text/col3 etc.` = If you want to change the text on the specified columns
`font/row1 | font/row2 | font/row3 etc.` = If you want to change the font on the specified rows
`font/col1 | font/col2 | font/col3 etc.` = If you want to change the font on the specified columns
`cr/row1 | cr/row2 | cr/row3 etc.` = If you want to change the end-of-line sequence on the specified rows
`transpose` = Do you wish to invert rows and columns ? Then `transpose=true` ☺.
`any other key` = can be used to make calculations using `\numexpr` or `\pgfmathparse`
or `$$\FPeval$`. Pay attention to put your formula inside curly brackets
`{$formula$}` if it contains a comma `,` or an equal `=` sign! }

- ☞ If `[<alignment>]` is specified, then each cell is placed into a `\makecell[<alignment>]` command.
- ☞ If both `text/row<i>` and `text/col<i>` are specified for the same cell, then `makecell \diaghead` is used to display the values in a diagonally divided cell.
- ☞ If you want to see (in the `.log` file) the code introduced into the tabular (or array) by `\repeatcell` type `\let\itf@message=\message` before `\repeatcell`.

Formulas: if you say: `x = $sin(10*\column$)` for example, then the formula is evaluated in each cell with `\pgfmath`. The result is stored into the control sequence `\x` and can be used in `text` or in any other following formula. The order in which the computed keys are given determines the order of evaluation... *of course!*

If you specify the number of columns (*resp.* of rows) as an integer, then `\repeatcell` works exactly as if you gave it a list of integers $\{1, 2, 3, 4, \dots, p\}$.

If you specify the rows as a comma separated list of values, the following sequences are also admissible in `text`:

- | | |
|------------------------------------|---|
| <code>\R\row</code> | refer to the value of the list for the current row. <code>\r</code> is the same (unless you defined a formula named <code>r</code>). |
| <code>\R{\langle n \rangle}</code> | to the value of the list for row $\{\langle n \rangle\}$ |

If the number of rows is specified as an integer, then `\R\row`, `\r` and `\row` are equal (to the current row index).

Similarly if you specify the columns as a comma separated list of values, the following sequences are provided:

- `\C\column` refer to the value of the list for the current column. `\c` is the same, unless you defined a formula named `c`.
- `\C{\<m>}` to the value of the list for column `{<m>}`

If the number of columns is specified as an integer, then `\C\row`, `\c` and `\col` are equal (to the current column index).

If the values in the lists are numeric, `\R`, `\C`, `\r` and `\c` can be used in formulas as well, *of course...*

~~~~~ A few examples are better than a 10 pages description ! ~~~~~

## 10.1 † Conversion to scaled points

```
\def\listofunits{ pt , cm , mm , bp , dd , pc , in , cc ,sp }
\begin{tabu}{|>{\bfseries}c|*9{X[mc]|}} \hline
\thead{units}
& \repeatcell[c]\listofunits{ text = \c, font=\bfseries } \\ \hline
\thead{value in\\ scaled\\ points}
& \repeatcell\listofunits{%
    sp =\number\dimexpr 1\c\relax,
    text=\numprint[sp]\sp} \\ \hline
\end{tabu}
```

| units                        | pt        | cm           | mm         | bp        | dd        | pc         | in           | cc         | sp   |
|------------------------------|-----------|--------------|------------|-----------|-----------|------------|--------------|------------|------|
| value in<br>scaled<br>points | 65 536 sp | 1 864 679 sp | 186 467 sp | 65 781 sp | 70 124 sp | 786 432 sp | 4 736 286 sp | 841 489 sp | 1 sp |

## 10.2 † Variable length cell

```
\newcommand\FAMILY[3]{%
\begin{tabu}{to .4\linewidth|*3{X[mc]}|} \hline
Mother & Father & Children \\ \hline
#1 & #2 & \makecell{\repeatcell[#3]{text=\c, transpose}} \\ \hline
\end{tabu}}
\FAMILY{Johanne}{Georg}{Priscilla,John,Tom}
\FAMILY{Nut}{Geb}{Isis,Osiris,Seth,Nephthys}
```

| Mother  | Father | Children                           |  |
|---------|--------|------------------------------------|--|
| Johanne | Georg  | Priscilla<br>John<br>Tom           |  |
| Nout    | Geb    | Isis<br>Osiris<br>Seth<br>Nephthys |  |

## 10.3 † Empty rows

```
\begin{tabu}{*6{|c|}} \hline
\repeatcell[6]{ text/col1=\row , rows=4, end=\hline } \\ \hline
\end{tabu}
```

|   |  |  |  |
|---|--|--|--|
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |

```
\begin{tabu}{*4{|c|}} \hline
\repeatcell[6]{ text/col1=\row , rows=4, end=\hline , transpose} \\ \hline
\end{tabu}
```

|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |

## 10.4 † color palette

```
\begin{tabular}{*{4}c}
\repeatcell{8}{transpose=true, rows=4,
red      = {$\$round(\c/8*255,0)$$},
greeni   = \red,           bluei   = \red,
greenii  = {$\$round(255-\red,0)$$}, blueii  = \red,
greeniii = \red,          blueiii = {$\$round(255-\red,0)$$},
greeniv  = \greenii,       blueiv  = \blueii,
text/row1=\cellcolor[RGB]{\red,\greeni,\bluei}(\red,\greeni,\bluei),
text/row2=\cellcolor[RGB]{\red,\greenii,\blueii}(\red,\greenii,\blueii),
text/row3=\cellcolor[RGB]{\red,\greeniii,\blueiii}(\red,\greeniii,\blueiii),
text/row4=\cellcolor[RGB]{\red,\greeniv,\blueiv}(\red,\greeniv,\blueiv)}
\end{tabular}
```

|               |               |               |               |
|---------------|---------------|---------------|---------------|
| (32,32,32)    | (32,223,32)   | (32,32,223)   | (32,223,223)  |
| (64,64,64)    | (64,191,64)   | (64,64,191)   | (64,191,191)  |
| (96,96,96)    | (96,159,96)   | (96,96,159)   | (96,159,159)  |
| (128,128,128) | (128,127,128) | (128,128,127) | (128,127,127) |
| (159,159,159) | (159,96,159)  | (159,159,96)  | (159,96,96)   |
| (191,191,191) | (191,64,191)  | (191,191,64)  | (191,64,64)   |
| (223,223,223) | (223,32,223)  | (223,223,32)  | (223,32,32)   |
| (255,255,255) | (255,0,255)   | (255,255,0)   | (255,0,0)     |

*Note:* `makecell` interact very badly with `colortbl`. Therefore, with `\cellcolor` or `\rowcolor`, the optional `[⟨alignment⟩]` parameter of `\repeatcell` does not give good results... `colortbl` remain a rather rough package, and deserve a finer implementation... in future.

## 10.5 † tabularcalc-like tables (with dcolumn package) and pgfmath

```
\def\listoffx{ -4 , -2 , 0 , 2.25 , 7 }
$\$ \begin{tabu}{|c<{\btopstrut}|*{5}{|D..{5.5}|}|} \hline
\rowfont{\large\color{blue}}
x &\repeatcell{\listoffx{ text=\C\column }} &&&& \\ \hline
f(x)=2x-3 &\repeatcell{\listoffx{ fx = \$2*\c-3\$, text=\fx }} &&&& \\ \hline
x^2 &\repeatcell{\listoffx{ xsquare = \$\C\column^2\$, text = \xsquare }} &&&& \\ \hline
h(x) = \sqrt{x^2+1} &\repeatcell{\listoffx{ x=\C\column, hx = {\$sqrt(pow(\x,2)+1)\$}, text = \hx }} &&&& \\ \hline
\end{tabu} $$
```

| x                       | -4      | -2      | 0       | 2.25    | 7       |
|-------------------------|---------|---------|---------|---------|---------|
| $f(x) = 2x - 3$         | -11.0   | -7.0    | -3.0    | 1.5     | 11.0    |
| $x^2$                   | -16.0   | -4.0    | 0.0     | 5.0625  | 49.0    |
| $h(x) = \sqrt{x^2 + 1}$ | 4.12310 | 2.23606 | 1.00000 | 2.46221 | 7.07106 |

\$\pgfmath\$ computations

| x                       | -4        | -2       | 0        | 2.25    | 7        |
|-------------------------|-----------|----------|----------|---------|----------|
| $f(x) = 2x - 3$         | -11.00000 | -7.00000 | -3.00000 | 1.50000 | 11.00000 |
| $x^2$                   | 16.00000  | 4.00000  | 0.00000  | 5.06250 | 49.00000 |
| $h(x) = \sqrt{x^2 + 1}$ | 4.12311   | 2.23607  | 1.00000  | 2.46221 | 7.07107  |

And the same with `FPeval` (fp package)

## 10.6 Double entry array: the Body Mass Index

| height in cm | 190  | 180  | 170  | 160  | 150  | 140  | 130  |                 |
|--------------|------|------|------|------|------|------|------|-----------------|
| weight in kg |      |      |      |      |      |      |      |                 |
| 30           | 8.3  | 9.3  | 10.4 | 11.7 | 13.3 | 15.3 | 17.8 | denutrition     |
| 45           | 12.5 | 13.9 | 15.6 | 17.6 | 20.0 | 23.0 | 26.6 | skinniness      |
| 50           | 13.9 | 15.4 | 17.3 | 19.5 | 22.2 | 25.5 | 29.6 | normal          |
| 55           | 15.2 | 17.0 | 19.0 | 21.5 | 24.4 | 28.1 | 32.5 | obesity         |
| 60           | 16.6 | 18.5 | 20.8 | 23.4 | 26.7 | 30.6 | 35.5 | serious obesity |
| 65           | 18.0 | 20.1 | 22.5 | 25.4 | 28.9 | 33.2 | 38.5 | morbid obesity  |
| 70           | 19.4 | 21.6 | 24.2 | 27.3 | 31.1 | 35.7 | 41.4 |                 |
| 80           | 22.2 | 24.7 | 27.7 | 31.3 | 35.6 | 40.8 | 47.3 |                 |
| 90           | 24.9 | 27.8 | 31.1 | 35.2 | 40.0 | 45.9 | 53.3 |                 |
| 95           | 26.3 | 29.3 | 32.9 | 37.1 | 42.2 | 48.5 | 56.2 |                 |
| 100          | 27.7 | 30.9 | 34.6 | 39.1 | 44.4 | 51.0 | 59.2 |                 |
| 110          | 30.5 | 34.0 | 38.1 | 43.0 | 48.9 | 56.1 | 65.1 |                 |
| 120          | 33.2 | 37.0 | 41.5 | 46.9 | 53.3 | 61.2 | 71.0 |                 |

| height in cm \ weight in kg | 30  | 45   | 50   | 55   | 60   | 65   | 70   | 80   | 90   | 95   | 100  | 110  | 120  |
|-----------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| height in cm                | 190 | 12.5 | 13.9 | 15.2 | 16.6 | 18.0 | 19.4 | 22.2 | 24.9 | 26.3 | 27.7 | 30.5 | 33.2 |
|                             | 180 | 9.3  | 13.9 | 15.4 | 17.0 | 18.5 | 20.1 | 21.6 | 24.7 | 27.8 | 29.3 | 30.9 | 34.0 |
|                             | 170 | 10.4 | 15.6 | 17.3 | 19.0 | 20.8 | 22.5 | 24.2 | 27.7 | 31.1 | 32.9 | 34.6 | 38.1 |
|                             | 160 | 11.7 | 17.6 | 19.5 | 21.5 | 23.4 | 25.4 | 27.3 | 31.3 | 35.2 | 37.1 | 39.1 | 43.0 |
|                             | 150 | 13.3 | 20.0 | 22.2 | 24.4 | 26.7 | 28.9 | 31.1 | 35.6 | 40.0 | 42.2 | 44.4 | 48.9 |
|                             | 140 | 15.3 | 23.0 | 25.5 | 28.1 | 30.6 | 33.2 | 35.7 | 40.8 | 45.9 | 48.5 | 51.0 | 56.1 |
|                             | 130 | 17.8 | 26.6 | 29.6 | 32.5 | 35.5 | 38.5 | 41.4 | 47.3 | 53.3 | 56.2 | 59.2 | 65.1 |

The same with transpose

**Note that fp computation can be time consuming...** depending on the formula and the number of cells to fill in. While preparing first such a table, give to the computed keys a constant value, and plug the formulas only when you are satisfied with the displayed tabular...

## 11 Interface ↗ enumitem : \setlist

```
\setlist [⟨environment, level⟩]{
    label = the label to be used
    font = the label font
    topsep = vertical space before the list
    partopsep = vertical space
    parsep = value of \parskip inside the list
    itemsep = vertical space between two items
    leftmargin = the list left margin
    rightmargin = the list right margin
    listparindent = the value of \parindent inside the list
    labelwidth = the width of the label box
    labelsep = horizontal space between label and following text
    itemindent = the indentation of the items
}
\setlist* [⟨environment, level⟩] {key=value}
```

Enumerated lists, description lists or itemize lists can be defined by `enumitem` with the command `\newlist`.

For example: `\newlist{mylegal}{enumerate}{10}`

The list can be customized with `\setlist`, for example:

```
\setlist[mylegal,1]{label*=\arabic*.}
\setlist[mylegal,2]{label*=\arabic*.}
\setlist[mylegal,3]{label*=\roman*)}
```

With `interfaces-enumitem` you may specify more than one level at a time in `\setlist`, (and even more than one environment at a time):

```
\setlist[mylegal,1,2]{label*=\arabic*.}
\setlist[mylegal,3]{label*=\roman*)}
```

A list can also be **modified** with `\setlist*`: keys that are not specified remain the same.

```
\setlist*[mylegal,1,2,3]{align=left, leftmargin=*}
```

or

```
\setlist*[mylegal]{align=left, leftmargin=*}
```

### `\interitem`

Just like  $\mathcal{M}\mathcal{S}$  `\intertext` in math formulæ, `\interitem` allows to put some non intended text inside a list environment. Example:

```
\begin{enumerate}[label=\roman*)], ,parsep=0pt]
\item First item in the enumerate envir
\interitem or (\intertext)
\item Second item
\end{enumerate}
```

The example give in real world:

- i) First item in the enumerate envir
- or: (\intertext)
- ii) Second item

And the following follows...

## 12 Interface ↗ truncate

The package `truncate` by Donal Arseneau provides the command:

```
\truncate[⟨TruncateMarker⟩]{⟨width⟩}{⟨text⟩}
```

to trunc the given `⟨text⟩` to the specified `⟨width⟩`, by means of `⟨TruncateMarker⟩` if the the truncation occurs.

### \trunctext[⟨TruncateMarker⟩]{⟨width⟩}{⟨text⟩}

`\trunctext` is the same as `\truncate` but it leaves `{text}` to its natural width if it has not to be truncated (*i.e.* if  $\langle width \rangle \leq \text{width of } \langle text \rangle$ ). Example:

|                                                               |              |
|---------------------------------------------------------------|--------------|
| <code>truncate: \truncate{&lt;5cm&gt;}{Hello world!}</code>   | Hello word!  |
| <code>trunctext: \trunctext{&lt;5cm&gt;}{Hello world!}</code> | Hello world! |

This corresponds to the `[fit]` option of the `truncate` package.

### \htruncadjust{⟨total width⟩}[⟨x<sub>1</sub>, x<sub>2</sub>, …, x<sub>n</sub>⟩]{⟨text<sub>1</sub>, text<sub>2</sub>, …, text<sub>n</sub>⟩}

This macro will measure the width of `text1, text2, …, textn` and adjust them for truncation:

| text              | width          | adjusted width                                                                                | $\gamma$ (truncated?)                                                                    | Returned width                                                              |
|-------------------|----------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| text <sub>1</sub> | w <sub>1</sub> | $w'_1 = \min\left(w_1, \frac{x_1}{\sum x_i} \times \langle \text{total width} \rangle\right)$ | $\gamma_1 = \begin{cases} 1 & \text{if } w'_1 < w_1 \\ 0 & \text{otherwise} \end{cases}$ | $\omega_1 = w'_1 + \gamma_1 \cdot \Phi \cdot \frac{x_1}{\sum \gamma_i x_i}$ |
| text <sub>2</sub> | w <sub>2</sub> | $w'_2 = \min\left(w_2, \frac{x_2}{\sum x_i} \times \langle \text{total width} \rangle\right)$ | $\gamma_2 = \begin{cases} 1 & \text{if } w'_2 < w_2 \\ 0 & \text{otherwise} \end{cases}$ | $\omega_2 = w'_2 + \gamma_2 \cdot \Phi \cdot \frac{x_2}{\sum \gamma_i x_i}$ |
| text <sub>3</sub> | w <sub>3</sub> | $w'_3 = \min\left(w_3, \frac{x_3}{\sum x_i} \times \langle \text{total width} \rangle\right)$ | $\gamma_3 = \begin{cases} 1 & \text{if } w'_3 < w_3 \\ 0 & \text{otherwise} \end{cases}$ | $\omega_3 = w'_3 + \gamma_3 \cdot \Phi \cdot \frac{x_3}{\sum \gamma_i x_i}$ |
| text <sub>4</sub> | w <sub>4</sub> | $w'_4 = \min\left(w_4, \frac{x_4}{\sum x_i} \times \langle \text{total width} \rangle\right)$ | $\gamma_4 = \begin{cases} 1 & \text{if } w'_4 < w_4 \\ 0 & \text{otherwise} \end{cases}$ | $\omega_4 = w'_4 + \gamma_4 \cdot \Phi \cdot \frac{x_4}{\sum \gamma_i x_i}$ |
|                   |                | $\Phi = \text{freespace} = \langle \text{total width} \rangle - \sum w'_i$                    |                                                                                          | $\sum \omega_i \leq \langle \text{total width} \rangle$                     |

Another example of a tabular made with `\repeattable`

The widths can be accessed with `\htruncwidth{⟨i⟩}` and then:

`\trunctext[⟨TruncateMarker⟩]{\htruncwidth{⟨i⟩}}{⟨texti⟩}.`

$x_i$  can be any real number provided that  $\sum_i x_i \leq 16383 = \text{\maxdimen}$  in points.

Measuring the widths occur inside a `\hbox`, thus `text1, …, textn` can contain macros, non expandable material *etc..* For example:

`\htruncadjust{4cm}[2,1]{Hello,world}` will prepare the widths so that their sum does not exceed 4 centimeters, and  $w_1 = 2 \times w_2$ .

`\htruncadjust{4cm}[2,1,2]{The,World,Is flat}` will prepare the widths so that their sum does not exceed 4 centimeters, and  $w_1 = w_3 = 2 \times w_2$ .

If the optional parameters  $x_i$  are not given, then they are equal to the natural width of `{text1, …, textn}`. In other words, `text1, …, textn` are truncated to a width proportional to their natural widths. (And the sum of their widths will not exceed `⟨ total width ⟩`).

This macro has been designed to cleverly truncate the text of headers, when they contain titles on both sides... Usually then, there are only two pieces of text whose width have to be adjusted for truncation...

```
\htruncadjust{3cm}{first quite long,second short,third}           % natural widths
\trunctext{\htruncwidth{1}}{first quite long}
    \trunctext{\htruncwidth{2}}{second short}
    \trunctext{\htruncwidth{3}}{third}

→ first quite...second...t...      (39.05698pt, 33.65436pt, 12.64691pt, total=85.35825pt).

\htruncadjust{3cm}[3,2,2]{first quite long,second short,third} % first is 3/2 of the two others
→ first quite...secon...third   (41.01503pt, 27.34372pt, 17.00078pt, total=85.35953pt).
```

## 13 Interface ☞ appendix and the appendices environment

`appendix` provides a way to write appendices inside an environment. This feature is suitable for short appendices like the one included in this document. `interfaces-appendix` gives an easier control on some parameter for the appendix with standard (optional) key names.

```
\begin{appendices}[%  
    section = section | chapter,  
    title = the appendix title,  
    intoc = true | false,  
    intoc/title = the entry in t.o.c.] if blank, no title in t.o.c., if no value: the appendix title  
    appendix content ...  
\end{appendices}
```

---

## 14 Interface ↗ embedfile : \embedthisfile

```
\embedthisfile  
\embedthisfile*
```

`\embedthisfile` will embed into the final .pdf file, the current .tex file and all .tex files that are included (with `\include`) in it. If `\includeonly` is used, the only files embeded (*ie.* attached) to the .pdf file are the ones specified by `\includeonly`.

`\embedthisfile*` embeds only the main file.

This macro could disappear from `interface-embedfile` if it is added to the main package... Depending on Mr Oberdiek moods ☺.

## 15 Interface ↗ environ

`environ` defines `\Renewenviron` but I found out it was usefull to have `\ReNewEnviron` (note the case!).

Therefore: `\let\ReNewEnviron\RenewEnviron` is made by `interfaces` (`\AfterPackage{environ}`).

## 16 Interface umrand

`umrand` defines the macro `\ifnotempty` which is already defined with a different meaning in `etextools`. `interfaces` provides a turn around to avoid redefinition.

For this turn around, `interfaces` must be loaded before `umrand` (because we use `\BeforePackage{umrand}`). This is – really – the only exception!

## 17 Interface pgfkeys (pgfmanual)

pgfkeys's the base of all... wonderfull and inimitable! ☺

The following handlers allows to build fairly quickly a key=value interface for commands in almost any case:

### ~~~~~ SUMMARY ~~~~~

|                                            |                                                                                                                                          |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <code>./blank</code>                       | replace blank value by another value                                                                                                     |
| <code>/is private</code>                   | throws an error if the key is used in an assignment                                                                                      |
| <code>/store in cs .estore in cs</code>    | like <code>/store in</code> but with <code>\csname...\endcsname</code>                                                                   |
| <code>/true /false</code>                  | <code>/is choice</code> shortcut for boolean keys                                                                                        |
| <code>/on /off</code>                      |                                                                                                                                          |
| <code>/is multiple choice</code>           | like <code>/is choice</code> but more than one choice can be selected at a time                                                          |
| <code>/is enum</code>                      | <code>/is choice</code> shortcut for enumerated keys                                                                                     |
|                                            | also provides the <code>/key/.number</code> key to get the numeric index of the selected choice.                                         |
| <code>/store as code</code>                | store value ( <i>expanded value</i> ) in the key. Created <code>+</code> and <code>*</code> keys to append code                          |
| <code>/estore as code</code>               |                                                                                                                                          |
| <code>/store as code in cs</code>          | store value ( <i>expanded value</i> ) in a cs-name rather than in the key. Created <code>+</code> and <code>*</code> keys to append code |
| <code>/estore as code in cs</code>         |                                                                                                                                          |
| <code>/store as color</code>               | store the color ( <i>the color command</i> ) in the key.                                                                                 |
| <code>/store as color command</code>       |                                                                                                                                          |
| <code>/store as color in cs</code>         | the same, store in the cs-name rather than in the key                                                                                    |
| <code>/store as color command in cs</code> |                                                                                                                                          |
| <code>/store as number</code>              | store an integer in the key ( <code>-</code> <code>+</code> and <code>*</code> keys are provided to add, subtract and multiply)          |
| <code>/estore as number</code>             |                                                                                                                                          |
| <code>/store as number in cs</code>        | the same, but stores into a cs-name rather than in the key                                                                               |
| <code>/estore as number in cs</code>       |                                                                                                                                          |
| <code>/store as glue</code>                | store a glue in the key ( <code>+</code> <code>-</code> and <code>*</code> keys are provided to add, subtract or scale)                  |
| <code>/estore as glue</code>               |                                                                                                                                          |
| <code>/store as glue in cs</code>          | the same, store in a given named control sequence                                                                                        |
| <code>/estore as glue in cs</code>         |                                                                                                                                          |
| <code>/store in skip cs</code>             | store the glue inside a <code>\skip</code> register rather than in a macro                                                               |
| <code>/store as dimen</code>               | store a dimen in the key (with <code>+</code> <code>-</code> and <code>*</code> keys for addition, subtraction and scaling)              |
| <code>/estore as dimen</code>              |                                                                                                                                          |
| <code>/store as dimen in cs</code>         | the same, store in a given named control sequence rather than in the key itself                                                          |
| <code>/estore as dimen in cs</code>        |                                                                                                                                          |
| <code>/store in dimen cs</code>            | store the dimension into a <code>\dimen</code> register rather than in a macro                                                           |

The command `\pgfkeysmeaning` is provided (with `\providetcommand`): it expands to the meaning of the given pgfkey.

### 17.1 Handler definition: `./blank`

A new handler `./blank` is defined to allow automatic replacement of empty or blank values by the “default” value specified:

```
\pgfkeys{/base/path/my key/.code=The key #1,%  
        /base/path/my key/.default=has its default value!,%  
        /base/path/my key/.blank=was left blank!}  
  
\pgfkeys{/base/path/my key,           produces The key has its default value!  
        /base/path/my key=}            produces The key was left blank!
```

The following make blank value behave the same as default :

```
\pgfkeys{/base/path/my key/.blank=\pgfkeysnovalue}
```

And If you wish to forbid blank values you can add:

```
\pgfkeys{/base/path/my key/.value required}
```

With `interface-pgfkeys` it is also possible to give a `./default` or/and a `./blank` value to a handler, or on the other hand to say that a handler must have (`./value required`) or does not suffer (`./value forbidden`) a value. (this feature was not implemented in `pgfkeys.code.tex`).

## 17.2 † Handler definition: `./is private`

This handler is mainly addressed to package writers. A private key does not suffer any assignment: this is a package constant:

```
\pgfkeys{/base/path/@my key/.is private=mypackage}
```

Then any assignment to `@my` key will throw an error, explaining that `@my` key is private to the package `mypackage`.

Similarly, there is a `/is private to class` handler (for `\ClassError` instead of `\PackageError`).

## 17.3 † Handler definition: `./store in cs` and `./estore in cs`

A new handler `/store in cs` is defined to store the value of a key in a named control sequence:

```
\pgfkeys{%
    /base/path/my key/.store in cs=some word,% will define : \"some word"
}
```

## 17.4 † Handlers definition: `./true`, `./false`, `./on` and `./off`

A key of type `./true` or `./false` can take the only values `true` or `false` and its default value is `true` (unless `./default=false` is explicitly given to `\pgfkeys`).

Similarly, a key of type `./on` or `./off` can take the only values `on` or `off` and its default value is `on` (unless `./default=off` is explicitly given to `\pgfkeys`).

These are shortcuts and a special case of `/is choice` keys:

```
\pgfkeys{
    my key/.true = code if the value is true,
    my key/.false = code if the value is false,
    my key2/.on = code if the value is on,
    my key2/.off = code if the value is off }
```

## 17.5 † Handler definition: `./is multiple choice`

A key defined with `/is multiple choice` behaves like a `/is choice` key but more than one choice can be selected at a time:

```
\pgfkeys{/path/.cd,
    format/.is multiple choice,
    format/bold/.code= ...,
    format/italic/.code= ...,
    format/color/.code= ... }
```

Possible values for key `format` are restricted to subkeys: `bold`, `italic` and `color`. But unlike simple `/is choice` keys, it is possible to use:

```
\pgfkeys{/path/format={bold,italic,color=...}}
```

this is the same as:

```
\pgfkeys{/path/format=bold,/path/format=italic,path/format={color=...}}
```

*The bookmark key of ↵ \sectionformat (in interface-titlesec) is a good example.*

## 17.6 † Handler definition: `./is enum`

A key defined with `/is enum` behaves like a `/is choice` key: its possible values are limited to sub-keys. The name of the selected sub-key is stored into the key.

```
\pgfkeys{/path/.cd,
    enumKey/.is enum={one,two,three}
}
```

`enumKey` can be `one` or `two` or `three` and nothing else.

```
\pgfkeys{ enumKey=two }
```

assigns `two` to the value of the key: `\pgfkeysvalueof{enumKey}` is `two`.

`\pgfkeysvalueof{enumKey/.number}` is 1 (zero based index)

## 17.7 † Handlers definition: `./store as code`, `./estore as code`

This handler stores the value given to the key in the key itself. Furthermore, a starred key `*` and a `+` keys are defined such that they append their value to the stored key.

```
\pgfkeys{/test./store as code,
          /test=some code,
          /test+= the following follows... }
```

Defines the key `/test` so that `\pgfkeysvalueof{/test}` expands to `some code`. `/test+` appends “the following follows” to the previous value of the key. (`/test*` does the same).

If you prefer not to have star keys `*`, or `+` keys, or only one of these, just say, for example:

```
\pgfkeys{/test./store as code=+}
```

*This feature is very important for `interfaces`: almost any `font` keys are defined with the handler `./store as code`.*

**A note for programmers:** `./store as code` defines three keys: `test`, `test+` and `test*`. (The two former are the same). The “append code” keys (`+` and `*`) call the *main key* `test`. This is handy because if you append code to the *main key* (with pgfkeys `/add code` or `/append code`) then this code will be expanded also in case the `+` or `*` keys are called.

There is also a `./estore as code` handler which expands the given code before storing it in the key.

## 17.8 † Handlers definition: `./store as code in cs=<cs-name>`, `./estore as code in cs=<cs-name>`

This handler works like `./store as code`: the content is stored in the cs-name given as value for the handler, but not inside the key itself (useful for key=value interfaces to other packages).

The `+` and `*` keys are provided: both append their value to the content of the given control sequence.

Typically, `/font` keys are defined this way for interface with other packages.

There is also a `./estore as code in cs` handler which expands the given code before storing it in the `<cs-name>`..

## 17.9 † Handler definition: `./store as color`

When specifying a color, did you say:

|                                   |                                 |
|-----------------------------------|---------------------------------|
| <code>color=\color{yellow}</code> | <code>color=\normalcolor</code> |
| <code>color=blue</code>           | <code>color=[rgb]{1,0,0}</code> |

In any case, `./store as color` will transform the value as follow:

|                           |                                                                              |
|---------------------------|------------------------------------------------------------------------------|
| <code>color=yellow</code> | <code>color=default</code> defined by <code>interfaces</code> if not already |
| <code>color=blue</code>   | <code>color=[rgb]{1,0,0}</code> defined <code>\AtBeginDocument</code>        |

In any case, `./store as color command` will transform the value as follow:

|                                 |                                       |
|---------------------------------|---------------------------------------|
| <code>color=\normalcolor</code> | <code>color=\color{yellow}</code>     |
| <code>color=\color{blue}</code> | <code>color=\color[rgb]{1,0,0}</code> |

Please! Dont write: `\def\myBlue{blue}`    `color=\myBlue`.

Use `\colorlet{myBlue}{blue}` instead, or `\definecolor`.

As for code, the color is stored inside the key.

## 17.10 † Handler definition: `./store as color in cs=<cs-name>`

The same as `./store as color`, but the color is stored in the given control sequence, rather than in the key itself.

There is also a `./store as color command in cs` handler. It is used to set the value to `\columnseprulecolor` by the key `columns/rule/color` of `\tocsetup`.

**17.11 † Handlers definition: `./store as number`, `./estore as number`****17.12 † Handlers definition: `./store as number in cs`, `./estore as number in cs`****17.13 † Handler definition: `./store as glue`**

This is quite the same as `./store as code`, but the given code is surrounded by `\glueexpr...``\relax...` and is stored inside the key.

Furthermore:

the `+` key adds to the length: `\glueexpr old value + < argument > \relax`.  
 the `-` key subtracts: `\glueexpr old value - < argument > \relax`  
 the `*` key scales: `\glueexpr old value * < argument > \relax`

The `<argument>` is **not expanded** but the content of the key is ready to be used in place of a length. Scaling of two forms are allowed: *fractionnal* and *real*. *Real* scaling is converted to a fraction of 65536:

```
\pgfkeys{/test/.store as glue,
          /test=12pt plus5pt,
          /test*=.5,
          /test+=\parskip,
          /test*=4/6
}
\pgfkeysmeaning{/test}
```

→ macro:->`\glueexpr \glueexpr \glueexpr \glueexpr 12pt plus5pt\relax *32768/65536\relax +\glueexpr \parskip\relax \relax *4/6\relax`

The value of `\parskip` is not expanded at `\pgfkeys` time, but only when the value of the key is used (for an assignment...)

There is also a handler called `./estore as glue` if you really want the value to be expanded (with `\the`) at the time of `\pgfkeys` setting.

**17.14 † New handler: `./store as dimen`**

Just like `./store as glue` but with `\dimexpr` instead of `\glueexpr`.

There is also a `./estore as dimen` handler, for immediate expansion.

**17.15 † New handler: `./store as glue in cs=<cs-name>`**

This is like `./store as glue` but the the value is assigned to a macro whose name is given, rather than in the key itself. Expansion *does not* occur `\pgfkeys` time: the macro contains the glue definition in `\glueexpr...``\relax` expressions.

`+` (to add) `-` (to subtract) and `*` (to scale) keys are provided.

There is also a `./estore as glue in cs` handler, and expansion occurs when the key is set.

**17.16 † New handler: `./store as dimen in cs=<cs-name>`**

Just like `./store as glue in cs` but with `\dimexpr` instead of `\glueexpr`.

**17.17 † New handler: `./estore as dimen in cs=<cs-name>`**

This handler as a particularity: if the value is given without dimension, `pt` is assumed (that is... points).

This is the way the key `size` is defined for the command `\changefont` (in *interfaces-LaTeX*). `size` defines `\f@size`, the macro used by L<sup>A</sup>T<sub>E</sub>X to store the font size (and `size+` adds, `size-` subtracts, `size*` scales). But `\f@size` is stored in points, without the mention of the dimension: `pt`.

With its default units in `pt`, `./estore as dimen in cs` is the handler of the situation:

## 18 Interface ↗ etoolbox - etoolbox-like commands

May be they will be added to `etoolbox.sty` one day or another... and disappear from `interfaces` ...

### 18.1 † New macros provided with \providetcommand

|                                               |                                                    |
|-----------------------------------------------|----------------------------------------------------|
| <code>\removefrom {hook}{&lt;code&gt;}</code> | <code>\removefromstart{hook}{&lt;code&gt;}</code>  |
| <code>\gremovefrom{hook}{&lt;code&gt;}</code> | <code>\gremovefromstart{hook}{&lt;code&gt;}</code> |
| <code>\eremovefrom{hook}{&lt;code&gt;}</code> | <code>\eremovefromstart{hook}{&lt;code&gt;}</code> |
| <code>\xremovefrom{hook}{&lt;code&gt;}</code> | <code>\xremovefromstart{hook}{&lt;code&gt;}</code> |

`\removefrom` removes the first occurrence of `{<code>}` from a `<hook>`. The command is robust.

`{<code>}` should not contain groups: `{...}` but parameter characters are allowed, which need not to be doubled. The match for `{<code>}` inside the replacement text of `<hook>` is category-code sensitiv.

If the first occurrence of `{<code>}` into `<hook>` has been removed

then `\ifin@` is set to `\iftrue`

otherwise `\ifin@` is set to `\iffalse` (`<hook>` does not contain `{<code>}`).

this allows loops of the form:

`\in@true`

`\@whilesw\ifin@\fi{\removefrom{hook}{<code>}}`

☞ `\eremovefrom` and `\xremovefrom` expand `{<code>}` before trying to remove it from `<hook>`. Only `{<code>}` is expanded, the current replacement text of `<hook>` is not.

☞ `g` and `x` versions make the assignment to `<hook>` global.

☞ `\removefromstart` remove `{<code>}` only if it appears at the very beginning of `<hook>`.

## 19 Interface ↗ scrfile

### 19.1 † Star forms for \BeforeFile and \AfterFile

`scrfile` provides `\BeforeFile` and `\AfterFile` in order to execute some code when a file is loaded. The hooks are automatically reset to `\relax` after the file has been loaded, in other words, they are expanded at most one only time. This can be avoided by using `\BeforeFile*` and `\AfterFile*`, for example:

```
\BeforeFile*{\jobname.toc}{\begin{multicols}{2}}
\AfterFile*{\jobname.toc}{\end{multicols}}
```

The hooks `before` and `after` will be executed **every time** `\jobname.toc` is loaded.

This feature is used in `\tocsetup{twocolumns}`.

### 19.2 † Allowing \BeforeFile and \AfterFile when \@input is invoked

The hooks `\BeforeFile` and `\AfterFile` are executed only when the file is loaded with `\InputIfFileExists`: indeed this macro is redefined by `scrfile`.

`interfaces` redefine `\@input` in order to execute those hooks also in case `\@input` is used: this is useful because `.toc` files are input with `\@input` rather than with `\InputIfFileExists`.

## 20 List of corrected or patched commands

Here is the complete list of patched commands in other packages.

The modification occurs only if the given module of `interfaces` is loaded. For example, `\addcontentsline` is modified only if packages `titlesec` and `bookmark` are loaded, *and if* `interface-titlesec` and `interface-bookmark` are loaded.

## 20.1 + L<sup>A</sup>T<sub>E</sub>X

|   | Patched command                                                                                                              | Type | Importance                          | Module           | ref. page |
|---|------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------|------------------|-----------|
| ❶ | <code>\@pkgextension</code><br><code>\@clsextension</code><br><code>\@ifpackageloaded</code><br><code>\@ifclassloaded</code> |      | minor<br>optimisation or correction | interfaces-LaTeX | 77        |

Those commands are replaced by their equivalent in the package `ltxcmds`:

```
\ltx@pkgextension \ltx@clsextension \ltx@ifpackageloaded \ltx@ifclassloaded
```

This is because L<sup>A</sup>T<sub>E</sub>X defines those commands `\@onlypreamble`, while the equivalent macros in `ltxcmds` can be used inside document as well.

|   | Patched command               | Type           | Importance                      | Module                                   | ref. page |
|---|-------------------------------|----------------|---------------------------------|------------------------------------------|-----------|
| ❷ | <code>\addcontentsline</code> | <i>prepend</i> | important<br>but no side effect | interface-titlesec<br>interface-bookmark | 39        |

`\addcontentsline` does a lot a thing and in particular it expands the `\bookmark` command (if the `bookmark` package is loaded, otherwise it's `hyperref`). As long as `\sectionformat` can drive the attributes of the bookmark for each section, it is necessary to expand `\bookmarksetup` with the right options before the section-bookmark is written.

This is achived by `\itf@ttl@BKM`, placed at the beginning of `\addcontentsline`.

|   | Patched command      | Type | Importance                      | Module            | ref. page |
|---|----------------------|------|---------------------------------|-------------------|-----------|
| ❸ | <code>\@input</code> |      | important<br>but no side effect | interface-scrfile | 77        |

The `\input` primitive (same as L<sup>A</sup>T<sub>E</sub>X control sequence `\@@input`) is surrounded by `\scr@load@hook{before}... \scr@load@hook{after}`:

Original:

```
\def\@input#1{\IfFileExists{#1}
  {@\input\@filef@und
   {\typeout{No file #1.}}%
  }%
```

Modified:

```
\renewcommand*\@input[1]{\IfFileExists{#1}
  {\scr@load@hook{before}{#1}%
   @\input\@filef@und
   \scr@load@hook{after}{#1}%
   {\typeout{No file #1.}}%
  }%
```

## 20.2 + bookmark \\bookmark

|   | Patched command        | Type         | Importance | Module             | ref. page |
|---|------------------------|--------------|------------|--------------------|-----------|
| ❹ | <code>\bookmark</code> | <i>modif</i> | important  | interface-bookmark | 41        |

The `*` keys for `\bookmarksetup` (`italic*` , `color*` , `bold*` , and `disable*` ) are local to the group, but govern only the very next bookmark.

After the bookmark has been written, previous values must be restored at the end of each group until the same group level as the one in which the `*` option has been set is reached (if this group is the main group, level 0, then a global assignment is made).

Well... this is done at `\write: \immediate\write{the bookmark entry}` is replaced by `\itf@BKM@write{the bookmark entry}` to check first:

- 1) is the bookmark disable ?
- 2) is it necessary to restore previous values after write (*i.e.* `\aftergroup`) ?

## 20.3 + colortbl

|   | Patched command                                  | Type         | Importance                      | Module             | ref. page |
|---|--------------------------------------------------|--------------|---------------------------------|--------------------|-----------|
| ❺ | <code>\CT@cellc</code><br><code>\endarray</code> | <i>corr.</i> | important<br>but no side effect | interface-makecell | 72        |

`colortbl` modifies the preamble of tabulars: it put each cell in a box, sets the color and then displays the box. The example shown page 13 does not work without a minor modification: the color specification must be expanded short before their usage.

Original:

```
\def\CT@cellc#1[#2]#3{%
  \expandafter\gdef\expandafter\CT@color\expandafter{%
    \expandafter\CT@color#1[#2]{#3}%
    \global\let\CT@cell@color\relax
  }}
```

Modified:

```
\def\CT@cellc#1[#2]#3{%
  #1 is either \@firstofone or \@gobble, [#2]#3 = color spec
  \xdef\CT@cell@color{\noexpand\CT@color#1[{#2}]{#3}%
  \global\let\noexpand\CT@cell@color\relax}%
}
```

`\endarray`: missed `\@arrayleft` in the redefinition of `colortbl`, then compatibility with `delarray` is broken. Bug fixed by `interfaces-base`.  
 Same problem for `arydshln` who redefines `\endarray`, taking care of `colortbl` but not of `delarray`. Bug fixed by `interfaces-base`.  
 Remember `arydshln` must be loaded after `colortbl` (this is not due to `interfaces`, but to the fact that both redefine `\@classz` from the `array` package).

## 20.4 † `hypbmsec`

|   | Patched command                                   | Type               | Importance                      | Module                                                               | ref. page |
|---|---------------------------------------------------|--------------------|---------------------------------|----------------------------------------------------------------------|-----------|
| ⑥ | <code>\hbs@do</code><br><code>\hbs@process</code> | <code>redef</code> | important<br>but no side effect | <code>interfaces-hypbmsec</code><br><code>interfaces-titlesec</code> | 44        |

In order to get `\lastsectiontitle`, `\lastsectionbookmark` and `\lastsectiontoc` updated at the right place (*i.e.* *after* `\sectionbreak` and *before* `\sectionmark`), some `interfaces`-macros have to be executed:

- at the beginning of `\hbs@do` → to get the word `section` or `subsection` etc..
- at the beginning of `\hbs@process` → to store the next section title, bookmark and toc

## 20.5 † `enumitem`

|   | Patched command       | Type               | Importance                          | Module                           | ref. page |
|---|-----------------------|--------------------|-------------------------------------|----------------------------------|-----------|
| ⑦ | <code>\setlist</code> | <code>redef</code> | minor<br>optimisation or correction | <code>interfaces-enumitem</code> | 72        |

`\setlist` is redefined by `interfaces-enumitem` in order to extend the syntax.

## 20.6 † `pgfkeys.code.tex`

|   | Patched command                                                  | Type               | Importance | Module                          | ref. page |
|---|------------------------------------------------------------------|--------------------|------------|---------------------------------|-----------|
| ⑧ | <code>\pgfkeys@unpack</code><br><code>\pgfkeys@case@three</code> | <code>redef</code> | important  | <code>interfaces-pgfkeys</code> | 79        |

`\pgfkeys@unpack` is modified to handle the case of the `/blank` handler: this is here that the value is conditionnally compared against .default, `/blank` or .value required.

`\pgfkeys@case@three` is modified to allow `handlers` to have .default, `/blank` or .value required values.

`\pgfkeys@exp@call`: missed a pair of braces around the value in `\pgfkeysalso`. Thus the code could break if the value contains an equal sign or a comma. Fixed.

# 21 Implementation

## 21.1 Interfaces

The package namespace is `itf@`.

```

1 < *package>
2 \NeedsTeXFormat{LaTeX2e}[2005/12/01]
3 \ProvidesPackage{interfaces}
4   [2010/11/26 v2.4 - pgfkeys (pgf 2.0 et 2.1 macros for interfaces (FC)]

```

### 21.1.1 Requirements

```
5 \RequirePackage{interfaces-base}
```

### 21.1.2 The package options / list of interfaces

```

6 \DeclareOption{LaTeX}{\AtEndOfPackage{\LoadInterface{LaTeX}}}
7 \DeclareOption{marks}{\AtEndOfPackage{\LoadInterface{marks}}}
8 \def\itf@tp#1{%
9   \DeclareOption{#1}{\AtEndOfPackage{\LoadInterface{#1}}}%}
10 }% \itf@tp
11 \itf@tp{titlesec}
12 \itf@tp{hyperref}
13 \itf@tp{bookmark}
14 \itf@tp{fancyhdr}
15 \itf@tp{tocloft}
16 \itf@tp{makecell}
17 \itf@tp{enumitem}
18 \itf@tp{hypbmsec}
19 \itf@tp{environ}
20 \itf@tp{truncate}
21 \itf@tp{appendix}
22 \itf@tp{embedfile}
23 \if\relax\@optionlist{interfaces.sty}\relax % no option given
24   \ExecuteOptions\@declaredoptions      % all interfaces are active
25 \fi
26 \ProcessOptions
27 </package>

```

## 21.2 Interfaces-base

```

28 < *base>
29 \ProvidesPackage{interfaces-base}
30   [2010/11/26 v2.4 Basic macros for interfaces package (FC)]
31 \RequirePackage{etex, ltxcmds, etoolbox, pgfkeys, scrlfile}
32 \AtEndOfPackage{%
33   \RequirePackage{interfaces-etoolbox}%
34   \RequirePackage{interfaces-scrlfile}%
35   \RequirePackage{interfaces-pgfkeys}%
36   \RequirePackage{interfaces-tikz}%
37   \RequirePackage{interfaces-umrand}%
38 }% AtEndOfPackage

```

\LoadInterface Mechanic of `interfaces`: each module is loaded \AfterPackage.

```

39 \newrobustcmd*\LoadInterface[1]{%
40   @for\itf@tp:=#1\do{%
41     \expandafter\ifx\csname\ifcsname\itf@tp\endcsname
42       \itf@tp\else\relax\fi\endcsname\marks
43       \RequirePackage{interfaces-marks}%
44     \else\expandafter\ifx\csname\ifcsname\itf@tp\endcsname
45       \itf@tp\else\relax\fi\endcsname\LaTeX
46       \RequirePackage{interfaces-LaTeX}%

```

```

47     \else
48         \expandafter\itf@LoadInterface\expandafter{\itf@tp}%
49     \fi\fi}%
50 }% \LoadInterface
51 \@onlypreamble\LoadInterface
52 \newrobustcmd*\itf@LoadInterface[1]{\ltx@ifpackageloaded{interfaces-#1}%
53   {}%
54   {\AfterPackage*{#1}{\RequirePackage{interfaces-#1}}}%
55 }% \itf@LoadInterface

56 \newrobustcmd*\itf@Check@Package[1]{\ltx@ifpackageloaded{#1}%
57   {}%
58   {\PackageError{interfaces-#1}%
59     {The package ‘#1’ must be loaded before ‘interfaces-#1’}%
60     \MessageBreak Please refer to ‘interfaces.pdf’ document%
61     \MessageBreak for correct usage of the ‘interfaces’ package}\@ehd
62   }%
63 }% \itf@Check@Package

```

`\itf@AfterPackage` This is `\AfterPackage*` but it works inside document. `\ltxcmds` provides `\ltx@ifpackageloaded` to check if a package is loaded and – unlike L<sup>A</sup>T<sub>E</sub>X’s `\@ifpackageloaded` – this macro is not restricted to the document preamble.

```

64 \newrobustcmd*\itf@AfterPackage[1]{%
65   \csname\ltx@ifpackageloaded{#1}{\ltx@secondoftwo}{\@AfterPackage}\endcsname{#1}%
66 }% \itf@AfterPackage

```

## 21.2.1 Bug Fixes

David Carlisle’s `colortbl` is not compatible with David Carlisle’s `delarray`!!

Bug Fixed by `interfaces-base`. At the same time, the bug exist as well in `arydshln` and we fix it.

```

\endarray

67 \AfterPackage*{colortbl}{%
68   \renewcommand*\endarray{%
69     \crcr \egroup \egroup \arrayright \gdef\@preamble{}\CT@end}%
70 }% AfterPackage colortbl
71 \AfterPackage*{arydshln}{%
72   \ltx@ifpackageloaded{colortbl}%
73   {%
74     \def\endarray{%
75       \adl@endarray \egroup \adl@arrayrestore \CT@end \egroup %<original>
76       \arrayright % <FC>
77       \gdef\@preamble{}% <FC>
78     }%
79   }%
80   {%
81     \def\endarray{%
82       \adl@endarray \egroup \adl@arrayrestore \egroup %<original>
83       \arrayright % <FC>
84       \gdef\@preamble{}% <FC>
85     }%
86   }%
87 }% AfterPackage arydshln

```

## 21.2.2 Interfaces patches

First a warning for loading `arydshln` after `colortbl`. Those packages does not interact properly.

```
88 \AfterPackage{colortbl}{%
89   {\ltx@ifpackageloaded{arydshln}%
90     {\PackageWarning{interfaces-base}%
91      {The package arydshln should be loaded after colortbl}%
92      \MessageBreak because both redefine \string\@classz}}%
93   {}}%
94 }% AfterPackage colortbl
```

`\itf@preapptocmd` The need for this macro has rised to make `\itf@patch` simpler.

This is also more secure to do `\pretocmd` and `\apptocmd` in the same time, for the result (success or failure) is always the same for both.

```
95 \newrobustcmd*\itf@preapptocmd[5]{%
96   \pretocmd#1{#2}%
97   {\apptocmd#1{#3}%
98    {#4}%
99    {#5}}%
100   {#5}}%
101 }% \itf@preapptocmd
```

`\itf@patch` `\itf@patch` is used as a prefix to `\pretocmd`, `\apptocmd` and `\patchcmd`.

It's main purpose is to keep the information (`\PackageInfo`) in the case `\usepackage{interfaces}` has been put in a `\dump` format.

`\PackageInfo` is then deferred `\AtBeginDocument` time...

```
102 \def\itf@patch{@makeother\#\futurelet\itf@tp\itf@patch@}
103 \def\itf@patch@{\csname itf@patch@\%
104   \ifx\itf@tp\patchcmd inside\else
105   \ifx\itf@tp\itf@preapptocmd inside\else
106   boundary\fi\fi
107   \endcsname
108 }% \itf@patch@
109 \def\itf@patch@boundary#1#2#3#4#5{%
110   \catcode`\#=6%
111   \let\itf@tp#2%
112   #1\itf@tp{#3}%
113   {\let#2\itf@tp
114     \AtBeginDocument{#4}% in order to keep this info even after \dump
115   }
116   {#5}}%
117 }% \itf@patch@boundary (for \pretocmd and \apptocmd)
118 \def\itf@patch@inside#1#2#3#4#5#6{%
119   \catcode`\#=6%
120   \let\itf@tp#2%
121   #1\itf@tp{#3}{#4}%
122   {\let#2\itf@tp
123     \AtBeginDocument{#5}%
124   }
125   {#6}}%
126 }% \itf@patch@inside (for \patchcmd)
```

### 21.2.3 Helper macros

```

127 \newskip\itf@sk
128 \newmuskip\itf@musk
129 \newtoks\itf@tk
130 \newcount\itf@cnt

\itf@strip@at \itf@strip@at removes all until @ while \itf@strip@dot removes the fractional part.
\itf@strip@dot
131 %% H E L P E R M A C R O S
132 \begingroup\makeatother
133   \csgdef{\itf@strip@at}{#1@{}}
134 \endgroup
135 \def\itf@strip@dot{#1.#2@nil{#1}}

```

\itf@expandonceifcs This macro is used to expand or not a comma separated list.

USAGE: \itf@expandonceifcs\macrotest

\macrotest is expanded once and its first token  $\tau$  is placed into a temporary macro \itf@tp.

If \macrotest equals \itf@tp: \macrotest is composed of that only token  $\tau$ , otherwise we leave and do nothing.

Then we test \noexpand $\tau$  against \relax with \ifcat. If false  $\tau$  cannot be a macro then we leave.

Then we test if  $\tau$  is expandable: \ifx $\tau$ =\expandonce $\tau$ ,  $\tau$  is not expandable and we leave. (may be \def $\tau$ { $\tau$ } but it's not *expandable*!).

Otherwise,  $\tau$  is expandable and \macrotest contains a single expandable token. Thus \macrotest shall be expanded once: \let\macrotest= $\tau$ .

```

136 \def\itf@expandonceifcs{\expandafter\itf@exp@ndonceifcs\expandafter#1#1Q@\nnil}
137 \def\itf@exp@ndonceifcs#1#2#3@\nnil{%
138   \def\itf@tp{#2}%
139   \ifx\itf@tp#1%
140     \ifcat\relax\noexpand#2%
141       \expandafter\expandafter\expandafter\remove@to@\nnil
142       \expandafter\ifx\expandafter#2#2@\nnil\else\@nnil\let#1#2\fi
143     \fi\fi
144 }% \itf@exp@ndonceifcs

```

### 21.2.4 Numbers

\itf@number \itf@number tries to get a number from its argument, and stores the result into the TeX count register given as first argument. Same syntax as L<sup>A</sup>T<sub>E</sub>X\@defaultunits.

A number is an integer that can be assigned to a count register, may be followed by one or more \relax.

```

145 %% G E T A N U M B E R (if possible)
146 %% USAGE: \itf@number\count<text>\relax@\nnil (like \@defaultunits)
147 \def\itf@number#1#2\relax@\nnil{%
148   \relax is to mimick the syntax of \@defaultunits
149   \afterassignment\itf@number#1\#2\relax\itf@number@%
150 }%
151 \def\itf@number@#1\relax#2\itf@number@{%
152   \ifblank{#1}{%
153     \csname ltx@\ifx\let@token\itf@number@@%
154       first\else second\fi oftwo\endcsname}%
155     \ltx@secondoftwo
156 }% \itf@number@
157 \def\itf@number@@#1{\futurelet\let@token\itf@number@@@}
158 \def\itf@number@@@{%
159   \csname \ifx\let@token\relax\itf@number@@%
160   \else remove@to@\nnil%
161   \fi\endcsname
162 }% \itf@number@@

```

## 21.2.5 Units and math units

`\itf@strip@mu` This is the equivalent of L<sup>A</sup>T<sub>E</sub>X's `\strip@pt` but for math units:

```
163 %% U N I T S F O R D I M E N S
164 \def\itf@strip@mu{\expandafter\itf@rem@mu\the}
165 {%
166 \@makeother\M\@makeother\U
167 \lowercase{%
168   \gdef\itf@rem@mu#1.#2MU{#1\ifnum#2>\z@.#2\fi}%
169 }}%
```

`\itf@units@pttomu` 1*mu* is exactly 1*em*/18 where the *em* is taken from `\textfont2`.

`\itf@units@muopt` Thus the scaling: `\fontdimen6\textfont2 * 100/1800`.

```
170 \% \skip = \itf@units@muopt \muskip
171 \def\itf@units@pttomu#1{\gluetomu\glueexpr
172   \glueexpr#1\relax*1800%
173   \expandafter\itf@strip@dot\the\dimexpr
174     \fontdimen6\textfont2*100\relax.\@nil
175   \relax
176 }% \itf@units@pttomu
177 \def\itf@units@muopt#1{\glueexpr
178   \mutoglue\muexpr#1\relax*
179   \expandafter\itf@strip@dot\the\dimexpr
180     \fontdimen6\textfont2*100\relax.\@nil/1800
181   \relax
182 }% \itf@units@muopt
```

`\itf@units@mu` Forces a dimension to be expressed in terms of math units (*mu*), convert if needed. `\cftdotsep` in `\tocloft` is expressed in math units.

```
183 \% \muskip = \itf@units@mu{ \skip or \muskip or number}
184 {%
185 \@makeother\P\@makeother\T\@makeother\S\@makeother\B
186 \@makeother\C\@makeother\M\@makeother\D\@makeother\I\@makeother\N
187 \lowercase{%
188 \gdef\itf@units@mu#1#2{\begingroup
189   \edef\itf@tp{#2}%
190   \atfor\x:={PT}{pt}{PC}{pc}{IN}{in}{BP}{bp}%
191     {CM}{cm}{MM}{mm}{DD}{dd}{CC}{cc}{SP}{sp}\do{%
192     \expandtwoargs\in@\x\itf@tp\ifin@\breakatfor\fi
193   }%
194   \expandafter\endgroup
195   \ifin@
196     #1=\itf@units@pttomu{#2}%
197   \else
198     \defaultunits#1 #2mu\relax\@nnil
199   \fi
200 }% \itf@units@mu
201 }}%
```

`\itf@units@pt` Conversely, forces a unit to be expressed in terms of points. Convert (from *mu*) if needed.

```
202 \% \skip = \itf@units@pt( \muskip or \skip or number )
203 {%
204 \@makeother\M\@makeother\U
205 \lowercase{%
206 \gdef\itf@units@pt#1#2{\begingroup
207   \expandtwoargs\in@{MU}{#2}%
208   \ifin@\else\expandtwoargs\in@{mu}{#2}\fi
209   \expandafter\endgroup
```

```

210   \ifin@
211     #1=\itf@units@mutopt{#2}%
212   \else
213     \@defaultunits#1 #2pt\relax\@nnil
214   \fi
215 }}}} \itf@units@pt

```

`\itf@units@scale` For multiplication of units: `\glueexpr...\relax*\itf@units@scale(scaling factor)!`

The scaling factor can be a fraction or a real number. Real numbers are approximated by a fraction of 65536.

```

216 %% glue * 1.5 = glue * 98302 / 65536
217 %% glue * 3/2 = glue * 3/2
218 \def\itf@units@scale#1{\itf@units@scale@normalize#1/\@nnil/\@nil}
219 \def\itf@units@scale@normalize#1/#2/#3@nil{%
220   \ifx#2\@nnil
221     \number\dimexpr#1pt\relax/65536
222   \else#1/#2
223   \fi
224 }% \itf@units@normalize

```

### 21.2.6 Default color

A trick about `\normalcolor`, which refers to `\default@color`:

`\default@color` is not expressed in terms of a color model. Therefore, it is not possible to convert it into a universally correct parameter for the `\color` command. That's why, for example, `\bookmark` ignore blank parameter for `color`: because it can do nothing with `\normalcolor` !

Solution: if a color named “`default`” has been defined in the preamble, then it is used as the default color. Otherwise, we define, `\AtBeginDocument` a color named “`default`”

If `xcolor` is loaded, an assignment: `\colorlet{default}{.}` is made `\AtBeginDocument`. If only `color` is loaded, then `\color{default}` means `\color{\default@color}` (this syntax is not admissible with `xcolor`, but it works with `color`).

```

225 \AtBeginDocument{%
226   \ltx@ifpackageloaded{xcolor}%
227   { \@ifundefinedcolor{default}%
228     {\colorlet{default}{.}}%
229   {} }%
230   \ltx@ifpackageloaded{color}%
231   { \@ifundefined{\string\color @default}%
232     {\expandafter\def\csname\string\color @default\endcsname{\default@color}}%
233   {} }%
234 {} }%
235 }%
236 </base>

```

## 21.3 Interface L<sup>A</sup>T<sub>E</sub>X

```

237 <*LaTeX>
238 \ProvidesPackage{interfaces-LaTeX}
239   [2010/10/31 v2.0 pgfkeys macros for LaTeX (FC)]
240 \RequirePackage{interfaces-base}
241 \itf@pgfkeys

```

### 21.3.1 \changefont

`\changefont` First use of `\pgfkeys` handlers `./store as glue in cs`, `./estore as dimen in cs`... The handlers create the `+` – and `*` keys automatically. As far as the `+` – and `*` keys invoke the main key, it is possible to `./append code` to the main key, without taking care of the `+` – and `*` keys.

The `./alias*` handler creates the aliases for the main key and the `+` `-` and `*` keys in one shot.

```

242 \newrobustcmd*\changefont[1]{\itf@pgfkeys
243   \pgfqkeys{/itf/TeX/changefont}{#1}\selectfont
244 }% \changefont
245 \AfterPackage*{hyperref}
246   {\pdfstringdefDisableCommands{\let\changefont\gobble}}
```

  

```

247 \pgfqkeys{/itf/TeX/changefont}{%
248   encoding/.code=\fontencoding{#1},encoding/.value required,%
249     enc/.alias=encoding,%
250   family/.code=\fontfamily{#1},family/.value required,%
251     fam/.alias=family,%
252   series/.code=\fontseries{#1},series/.value required,%
253     ser/.alias=series,%
254   shape/.code=\fontshape{#1},shape/.value required,%
255     sha/.alias=shape,%
256   size/.estore as dimen in cs=f@size,%
257   size/.append code=\set@fontsize\f@linespread\f@size\f@baselineskip,%
258     siz/.alias*=size,%
259   baselineskip/.store as glue in cs=f@baselineskip,%
260   baselineskip/.append code=\set@fontsize\f@linespread\f@size\f@baselineskip,%
261     skip/.alias*=baselineskip,%
262   linespread/.estore as dimen in cs=f@linespread,%
263   linespread/.add code={\ifx\f@linespread\empty\let\f@linespread\@ne\fi}%
264     {\edef\f@linespread{\expandafter\rem@pt\f@linespread}%
265      \set@fontsize\f@linespread\f@size\f@baselineskip},%
266   linespread+/.prefix code=\ifx\f@linespread\empty\let\f@linespread\@ne\fi,%
267   linespread-/.prefix code=\ifx\f@linespread\empty\let\f@linespread\@ne\fi,%
268   linespread*/.prefix code=\ifx\f@linespread\empty\let\f@linespread\@ne\fi,%
269     spread/.alias*=linespread,%
270 }% \pgfkeys definitions for \changefont
271 \itf@AfterPackage{color}{%
272   \pgfkeysifdefined{/itf/TeX/changefont/color/.@cmd}{}
273   {\pgfkeys{/itf/TeX/changefont/color/.code=\color{#1}}}}%
274 }% AfterPackage color
275 \itf@AfterPackage{xcolor}{%
276   \pgfkeysifdefined{/itf/TeX/changefont/color/.@cmd}{}
277   {\pgfkeys{/itf/TeX/changefont/color/.code=\color{#1}}}}%
278 }% AfterPackage xcolor

```

279

## 21.4 Interface TikZ ( pgfmanual )

```

280 {*tikz}
281 \ProvidesPackage{interfaces-tikz}
282   [2010/11/26 v2.4 load tikz libraries easily - pgf 2.0 & 2.1 (FC)]
283 \RequirePackage{interfaces-base}
284 \itf@pgfkeys
```

### 21.4.1 Catcode verifications

Some languages (french) changes the catcode of punctuations symbols: `:` and `!` are active, and this is bad for tikz calculations.

`\tikzset{every picture/.style=@makeother...}` solves the problem.

```

285 %% Some catcode checking
286 \AfterPackage*{tikz}{%
287   \AtEndPreamble{%
288     \tikzset{every picture/.add style={%
289       /utils/exec={@\makeother\!@\makeother\!:}}}}%
290 }%
291 }%
```

### 21.4.2 List of pgf/TikZ packages and libraries

`\alltikzpackages` Record “modules” that must be loaded with `\usepackage`:

```
292 \newcommand*\alltikzpackages{%
293   tikz,pgf,pgfcore,pgfcalendar,pgffor,pgfkeys,pgfpages,pgfrcs,tikzexternal,xxcolor,%
294   pgfplots,pgfsys,pgfmath,%
295   pgfpic2e,fp,%           + fp required for fixedpointarithmetic
296 }% \alltikzpackages
```

`\allpgfmodules` Record modules that must be loaded with `\usepgfmodule`:

```
297 \newcommand*\allpgfmodules{datavisualization,%
298 decorations,%
299 matrix,%
300 oo,%
301 parser,%
302 plot,%
303 shapes,%
304 snakes,%
305 sorting%
306 }% \allpgfmodules
```

`\alltikzlibraries` Record modules that must be loaded with `\usetikzlibrary`.

If a module is not found in any of the three lists `\alltikzpackage`, `\allpgfmodules`, and `\alltikzlibraries` then `\usetikzlibrary` is used by default.

```
307 \newcommand*\alltikzlibraries{3d,%
308 arrows,%
309 automata,%
310 backgrounds,%
311 calc,%
312 calendar,%
313 chains,%
314 circuits,%
315 circuits.ee,%
316 circuits.ee.IEC,%
317 circuits.logic,%
318 circuits.logic.CDH,%
319 circuits.logic.IEC,%
320 circuits.logic.US,%
321 datavisualization,%
322 datavisualization.3d,%
323 datavisualization.barcharts,%
324 datavisualization.formats.functions,%
325 datavisualization.polar,%
326 datavisualization.sparklines,%
327 decorations,%
328 decorations.footprints,%
329 decorations.fractals,%
330 decorations.markings,%
331 decorations.pathmorphing,%
332 decorations.pathreplacing,%
333 decorations.shapes,%
334 decorations.text,%
335 er,%
336 external,%
337 fadings,%
338 fit,%
339 fixedpointarithmetic,%
340 folding,%
341 fpu,%
342 graphs,%
```

```

343 graphs.basic,%
344 intersections,%
345 lindenmayersystems,%
346 matrix,%
347 mindmap,%
348 patterns,%
349 petri,%
350 plothandlers,%
351 plotmarks,%
352 positioning,%
353 scopes,%
354 shadings,%
355 shadows,%
356 shapes,%
357 shapes.arrows,%
358 shapes.callouts,%
359 shapes.gates.logic.IEC,%
360 shapes.gates.logic.US,%
361 shapes.geometric,%
362 shapes.misc,%
363 shapes.multipart,%
364 shapes.symbols,%
365 snakes,%
366 spy,%
367 svg.path,%
368 through,%
369 topaths,%
370 trees,%
371 turtle%
372 }% \alltikzlibraries

```

### 21.4.3 pgfkeys definitions for \usetikz

```

373 \pgfqkeys{/itf/tikz}{%
374   basic/.code={%
375     \usetikzlibrary{calc,%
376                   arrows,%
377                   backgrounds,%
378                   scopes}%
379   }%
380 },%
381 basic/.value forbidden,% \alltikzpackages
382 base/.alias=basic,%
383 all/.code={%
384   \expandafter\RequirePackage\expandafter{\alltikzpackages}%
385   \expandafter\usepgfmodule\expandafter{\allpgfmodules}% see pgfcorescopes.code.tex
386   \expandafter\usetikzlibrary\expandafter{\alltikzlibraries}% from: tikz.code.tex
387 },%
388 .unknown/.code=\itf@usetikzcode\pgfkeyscurrentname
389 }% \pgfkeys for \usetikz

```

\usetikz

```

390 \newrobustcmd*\usetikz[1]{%
391   \RequirePackage{tikz}%
392   \ifblank{#1}%
393     {\pgfqkeys{/itf/tikz}{all}}%
394     {\pgfqkeys{/itf/tikz}{#1}}%
395   \itf@pgfkeys% overwritten by \input primitive otherwise
396 }% \usetikz

```

\itf@usetikzcode For unknown keys: when a library is referenced.

```

397 \newrobustcmd*\itf@usetikzcode[1]{\begingroup
398   \edef\x{%
399     \noexpand\in@{,#1}{,\alltikzpackages,}%
400     \noexpand\ifin@ \noexpand\usepackage{#1}%
401     \noexpand\else
402       \noexpand\in@{,#1}{,\allpgfmodules,}%
403       \noexpand\ifin@ \noexpand\usepgfmodule{#1}%
404       \noexpand\else \noexpand\usetikzlibrary{#1}\usetikzlibrary by default
405       \noexpand\fi
406     \noexpand\fi
407   }\expandafter\endgroup\x
408 }% \itf@usetikzcode
409 
```

409 </tikz>

## 21.5 ↗ Interface ↗ titlesec : \sectionformat

```

410 {*titlesec}
411 \ProvidesPackage{interfaces-titlesec}
412 [2010/11/15 v2.1 pgfkeys macros for titlesec (FC)]
413 \RequirePackage{interfaces-base}
414 \RequirePackage{auxhook}% <fix for \ttlp@append (odd/even pages)>
415 \RequirePackage{getttitlestring}
416 \itf@Check@Package{titlesec}
417 \itf@pgfkeys

```

### 21.5.1 titlesec modifications

```

418%% t i t l e s e c "p a t c h e s"
419\robustify\titleclass \robustify\titleformat \robustify\titlespacing
420\AddLineBeginMainAux{%
421   \string\providetoggle\string\ttlp@append[2]{}}%
422}
423\BeforeFile*{ttlkeys.def}{%
424  \catcode32 9\relax % ignore spaces
425  \count@\endlinechar\endlinechar\m@ne % and line feeds
426}
427\AfterFile*{ttlkeys.def}{% restore spaces and line feeds
428  \catcode32 10\relax
429  \endlinechar\count@
430}

```

\ttlh@runinifempty A “new” shape which behaves like **hang** but no paragraph break is inserted if the title is empty. Hence the name: **runinifempty**.

```

431-----%
432%% runinifempty => like hang but no paragraph break (like runin) if title is empty
433\def\ttlh@runinifempty{%
434  \csname ttlh@\ifx\ttl@savetitle\@empty runin\else hang\fi\endcsname
435 }% \ttlh@runinifempty

```

### 21.5.2 \sectionformat

```

\sectionformat \sectionformat\subsection* [<shape>]{<key=value>}
436 \newrobustcmd*\sectionformat[1]{\ifstar
437   {\itf@sectionformat{#1}{/*}}
438   {\itf@sectionformat{#1}{}}%
439 }% \sectionformat
440 \def\itf@sectionformat#1#2{@testopt
441   {\expandafter\expandafter\expandafter%
442    \itf@sectionformat{#1#2}{\gobble\string#1\@nil{#2}}{}}%
443 }% \sectionformat

```

```

444 \def\itf@sectionf@rmat#1@nil#2[#3]{\itf@pgfkeys\ifblank{#3}
445   {\pgfqkeys{/itf/titlesec}{#1#2}}
446   {/itf/titlesec/@setup={#1}{#2},#4,/itf/titlesec/@update={#1}{#2}}}
447   {\pgfqkeys{/itf/titlesec}{#1#2}}
448   {/itf/titlesec/@setup={#1}{#2},#4,shape={#3},/itf/titlesec/@update={#1}{#2}}}}%
449 }% \itf@ttl@sectionformat

```

`\itf@ttl@setup` Macros used to retrieve the values set by `\titleformat` and/or `\titlespacing`. This allows to use `\itf@ttl@getformat` `\sectionformat` concurrently with `\titleformat` and `\titlespacing` provided by `titlesec`.

```

\itf@ttl@getspacing 450% private keys @setup and @update
451 \pgfqkeys{/itf/titlesec}{%
452   @setup/.code 2 args=\itf@ttl@setup{#1}{#2},%
453   @update/.code 2 args=\expandafter\itf@ttl@update
454   \csname#1\endcsname{/itf/titlesec/#1}{#2}%
455 }
456 \newrobustcmd*\itf@ttl@setup[2]{%
457   \pgfkeysifdefined{/itf/titlesec/#1#2/shape}{}
458   {\itf@ttl@newsection{#1}{#2}}%
459   \ifcsundef{ttls@#1#2}{% no previous spacing settings
460     \expandafter\expandafter\expandafter%
461     \itf@ttl@getspacing\csname ttls@#1#2\endcsname{/itf/titlesec/#1#2}}%
462   \ifcsundef{ttlf@#1#2}{% no previous format settings
463     \expandafter\expandafter\expandafter%
464     \itf@ttl@getformat\csname ttlf@#1#2\endcsname{/itf/titlesec/#1#2}}%
465 }% \itf@ttl@setup
466 \def\itf@ttl@setkey#1#2{\begingroup
467   \def\x{\pgfkeysvalueof{#1}}\def\y{#2}%
468   \expandafter\endgroup\ifx\x\y\else
469     \pgfkeyssetvalue{#1}{#2}\fi
470 }% \itf@ttl@setkey
471 \def\itf@ttl@getspacing#1#2#3#4#5#6{%
472   \itf@ttl@setkey{#6/left}{#1}%
473   \itf@ttl@setkey{#6/right}{#2}%
474   \itf@ttl@setkey{#6/top}{#3}%
475   \itf@ttl@setkey{#6/bottom}{#4}%
476   \itf@ttl@setkey{#6/indent first}{#5}%
477 }% \itf@ttl@getspacing
478 \def\itf@ttl@getformat#1#2{%
479   \csname ltx@\ifx\pgfkeysvalueof#1first\else second\fi oftwo\endcsname
480   {\itf@ttl@get@format{}}
481   {\itf@ttl@get@format{#1}{#2}}%
482 }% \itf@ttl@getformat
483 \def\itf@ttl@get@format#1#2#3#4#5#6#7{%
484   \ifrelax\detokenize{#1}\relax\else
485     \pgfkeysEsetvalue{#7/shape}{\expandafter\itf@strip@at\string#1}%
486   \fi
487   \itf@ttl@setkey{#7/font}{#2}%
488   \itf@ttl@setkey{#7/label}{#3}%
489   \itf@ttl@setkey{#7/sep}{#4}%
490   \itf@ttl@setkey{#7/before}{#5}%
491   \itf@ttl@setkey{#7/after}{#6}%
492 }% \itf@ttl@get@format

```

`\itf@ttl@update` This macros plugs the values set before with `\pgfkeys` into the special macros `\ttlf@<section>` (for format) and `\ttls@<section>` (for spacing).

```

493 \newrobustcmd*\itf@ttl@update[3]{%
494   \ifblank{#3}
495   {\ttl@getkeys{#1}{titlesec}}
496   {\ttl@getkeys{name=#1,numberless}{titlesec}}%
497   \pgfkeysgetvalue{#2#3/shape}\itf@tp
498   \ifcsundef{ttlh@\itf@tp}%

```

```

499      {\begingroup \makeatletter
500      \InputIfFileExists{\itf@tp.tss}{}{%
501      \PackageError{titlesec}{Unknown shape}{%
502          {Shapes are defined in files with extension tss\MessageBreak
503          Either you have misspelled the shape\MessageBreak
504          or there is no a \itf@tp.tss file}}%
505      \endgroup}
506      {}%
507      \ifttl@explicit@\temptokena{\csdef{ttl@}{\ttl@a}##1}%
508      \else@\temptokena{\csdef{ttl@}{\ttl@a}}%
509      \fi
510      \the@\temptokena{%
511          \pgfkeysvalueof{#2#3/shape@cs}%
512          \pgfkeysvalueof{#2#3/font}%
513          \pgfkeysvalueof{#2#3/label}%
514          \pgfkeysvalueof{#2#3/sep}%
515          \pgfkeysvalueof{#2#3/before}%
516          \pgfkeysvalueof{#2#3/after}%
517          \csname ttl@compat\ttl@a\endcsname
518          \ttl@spacing@ii
519          \pgfkeysvalueof{#2#3/indent first}%
520          \pgfkeysvalueof{#2#3/left}%
521          \pgfkeysvalueof{#2#3/top}%
522          \pgfkeysvalueof{#2#3/bottom}%
523          \pgfkeysvalueof{#2#3/right}}%
524 }% \itf@ttl@update

```

\itf@ttl@titleclass This macro calls \titleclass to either:

- change the class of an existing sectioning command;
- or:
- create a new sectioning command.

```

525 %%-----%
526 % t i t l e c l a s s
527 \newrobustcmd*\itf@ttl@titleclass{\ifstar
528     {\itf@ttl@titleclass@i*}
529     {\itf@ttl@titleclass@i{}}
530 }% \itf@ttl@titleclass
531 \def\itf@ttl@titleclass@i#1#2[#4]#5@nil{\ifblank{#4}
532     {%
533         \expandafter\titleclass\csname#2\endcsname{#3}%
534     }
535     {%
536         \expandafter\titleclass\csname#2\endcsname{#3}[{#4}]% #4 = sup-level
537         \if\relax#1\relax % not starred
538             \expandafter\expandafter\expandafter%
539                 \itf@ttl@titleclass@ii\expandafter\@gobble\string#4\relax{#2}%
540         \fi
541     }%
542     \expandafter\providecommand\csname l@#2\endcsname[2]{% no entry in toc
543 }% \itf@ttl@titleclass@i
544 \def\itf@ttl@titleclass@ii#1\relax#2{%
545     \ifcsundef{c@#2}
546         {\newcounter{#2}[{#1}]% creates counter for #1
547             {\@addtoreset{#2}{#1}}%
548         \csxdef{the#2}{%
549             \expandafter\noexpand\csname the#1\endcsname
550             .\noexpand\arabic\expandafter\noexpand\csname c@#2\endcsname
551         }% \the#2
552         \ifcsundef{l@#1}{}{%
553             \expandafter\providecommand\csname l@#2\endcsname[2]{%
554                 \csname l@#1\endcsname{##1}{##2}%
555             }% \l@#2 = \l@newsection is (by default) the same as \l@sup-level

```

```
556     }%
557 }% \itf@ttl@titleclass@ii
```

\itf@ttl@createsection If `\sectionformat` is invoked with an unknown sectionning command (*i.e.* an undefined macro as first argument) then `\itf@ttl@createsection` is expanded in order to:

- 1) create the new sectionning command with `\titleclass`,
- 2) create the `pgfkeys` keys for this section,
- 3) do some additionnal setup if `interfaces-hypbmsec` and/or `interfaces-tocloft` are loaded.

```
558 %-----%
559 %% Creating new sections
560 \def\itf@ttl@createsection#1{%
  sectionning command undefined: temporarily defined
  \expandafter\titleclass\csname#1\endcsname{straight}[*]%
  in straight class
561   \itf@AfterPackage{hypbmsec}{%
562     \AfterPreamble{%
563       \csletcs{hbs@#1}{#1}%
564       \csxdef{#1}{\noexpand\hbs@do\expandafter\noexpand\csname hbs@#1\endcsname}%
565     }%
566   }%
567 }%
568 \itf@AfterPackage{interfaces-tocloft}{%
569   \itf@cft@newsection{#1}{toc}%
570 }%
571 \itf@AfterPackage{interfaces-hypbmsec}{%
572   \expandafter\let\csname last#1title\endcsname\relax
573   \expandafter\let\csname last#1bookmark\endcsname\relax
574   \expandafter\let\csname last#1toc\endcsname\relax
575 }%
576 }% \itf@ttl@createsection
```

### 21.5.3 Keys for `\sectionformat`

\itf@ttl@newsection This macro creates the `pgfkeys` keys for each sectionning command.

The `pgfkeys` keys are not created at once, but only when `\sectionformat` is invoked first.

```
577 %-----%
578 %% Defining keys for each section
579 \def\itf@ttl@newsection#1#2{%
  #1=section, #2=/* or empty
  \ifcscundef{#1}{%
    sectionning command undefined: temporarily defined in straight class
    \itf@ttl@createsection{#1}%
  }%
  \ifblank{#2}{%
    \pgfqkeys{/itf/titlesec/#1}{%
      these keys do not exist for starred sections
      class/.code=\itf@ttl@titleclass{#1}##1[]\@nil,% with \addtoreset
      class/.value required,% if sup-level is given
      class*/.code=\itf@ttl@titleclass*{#1}##1[]\@nil,% without \addtoreset
      class*/.value required,% even if sup-level is given
      shape/.initial=,% initial shapes set by titlesec.sty for not numbered sections.
      the#1/.store in cs=the#1,%
      the#1/.default=\pgfkeysvalueof{/itf/titlesec/#1/label},%
    }%
    % starred section: unless titlesec, we do not put the default shape to hang,
    \pgfkeysifdefined{/itf/titlesec/#1/shape}{%
      but to the shape of the not starred
      \pgfkeysvgetvalue{/itf/titlesec/#1/shape}\itf@tp%
      \def\itf@tp{hang}%
    }%
    \pgfkeysvset{/itf/titlesec/#1#2/shape}\itf@tp%
  }%
  \pgfqkeys{/itf/titlesec/#1#2}{%
    shape/.value required,%
    shape@cs/.initial=
    \csname ttlh@\pgfkeysvvalueof{/itf/titlesec/#1#2/shape}\endcsname,% constant
  }%
}
```

```

603     shape@cs/.is private=interface-titlesec,% constant
604     font/.store as code,%
605         format/.alias*=font,%
606     label/.store as code,%
607         sep/.estore as glue,%
608             labelsep/.alias*=sep,%
609         before/.store as code,%
610             after/.store as code,%
611             indent first/.true=\pgfkeyssetvalue{/itf/titlesec/#1#2/indent first}{\@ne},%
612             indent first/.false=\pgfkeyssetvalue{/itf/titlesec/#1#2/indent first}{\z@},%
613                 identfirst/.alias=indent first,%
614                     indent first=true,%
615                 left/.estore as glue,%
616                 top/.estore as glue,%
617                 bottom/.estore as glue,%
618                 right/.estore as glue,%
619             break/.code=\ifblank{##1}
620                 {\cslet{\#1break}\empty}
621                 {\protected\csdef{\#1break}{##1}},%
622             break*/.code=\protected\apptocs{\#1break}{##1},%
623             break+/.alias=break*,%
624         mark/.code=\ifblank{##1}
625             {\cslet{\#1mark}\gobble}
626             {\protected\long\csdef{\#1mark}####1{##1}},%
627         mark/.default=,%
628 }% \pgfkeys
629 \ifblank{#2}{% no default marks for starred (numberless) \section*
630 \itf@AfterPackage{interfaces-marks}{% requires interfaces-marks
631     \pgfkeys{/itf/titlesec/#1/mark/.default=\marksthe{##1}{##1}}%
632 }% AfterPackage interfaces-mark
633 \itf@AfterPackage{interfaces-bookmark}{% requires interfaces-bookmark
634     \pgfqkeys{/itf/titlesec/#1}{% does not exist for starred sections
635         bookmark/.is multiple choice,%
636         bookmark/level/.estore in cs=toclevel@#, % depth of the bookmark
637             bookmark/level/.default=\ifcsvvoid{ttll@#1}{99}{\csuse{ttll@#1}},%
638             bookmark/level/.blank=\ifcsvvoid{toclevel@#1}
639                 {\ifcsvvoid{ttll@#1}{99}{\csuse{ttll@#1}}}{\csuse{toclevel@#1}},%
640             bookmark/toclevel/.alias=bookmark/level,%
641         bookmark/bold/.code=\ifblank{##1}
642             {\pgfkeyslet{/itf/titlesec/#1/bookmark/bold}\empty}
643             {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/bold}{bold=##1},},%
644             bookmark/bold/.default=true,%
645         bookmark/bold*/.code=\ifblank{##1}
646             {\pgfkeyslet{/itf/titlesec/#1/bookmark/bold*}\empty}
647             {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/bold*}{bold*=##1},},%
648             bookmark/bold*/.default=true,%
649         bookmark/italic/.code=\ifblank{##1}
650             {\pgfkeyslet{/itf/titlesec/#1/bookmark/italic}\empty}
651             {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/italic}{italic=##1},},%
652             bookmark/italic/.default=true,%
653         bookmark/italic*/.code=\ifblank{##1}
654             {\pgfkeyslet{/itf/titlesec/#1/bookmark/italic*}\empty}
655             {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/italic*}{italic*=##1},},%
656             bookmark/italic*/.default=true,%
657         bookmark/color/.code=\ifblank{##1}
658             {\pgfkeyslet{/itf/titlesec/#1/bookmark/color}\empty}
659             {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/color}{color=##1},},%
660             bookmark/color/.default=,%
661         bookmark/color*/.code=\ifblank{##1}
662             {\pgfkeyslet{/itf/titlesec/#1/bookmark/color*}\empty}
663             {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/color*}{color*=##1},},%
664             bookmark/color*/.default=,%
665         bookmark/on/.code=\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/on}{disable=false},%
666             bookmark/on/.value forbidden,%
667         bookmark/off/.code=\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/on}{disable=true},%

```

```

668     bookmark/off/.value forbidden,%
669     bookmark/none/.alias=bookmark/off,%
670     bookmark/style/.code=\ifblank{##1}%
671         {\pgfkeyslet{/itf/titlesec/#1/bookmark/style}\@empty}
672         {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/style}{style=##1,}},%
673         bookmark/style/.default=,%
674     bookmark/.unknown/.code=\pgfkeysEsetvalue{/itf/titlesec/#1/bookmark/other}%
675             {\pgfkeyscurrentname={##1}},%
676     bookmark/bold/.initial=,%
677     bookmark/bold*/.initial=,%
678     bookmark/italic/.initial=,%
679     bookmark/italic*/.initial=,%
680     bookmark/color/.initial=,%
681     bookmark/color*/.initial=,%
682     bookmark/on/.initial=,%
683     bookmark/style/.initial=,%
684 } }% \AfterPackage*{interfaces-bookmark}
685 }% not starred (numberless) \section
686 {}% starred/numberless \section*: do not create the keys
687 }% \itf@ttl@newsection

```

\addcontentsline (patch) This modification of \addcontentsline occurs only if both `interfaces-bookmark` and `interfaces-titlesec` are loaded. Implementation of the `bookmark` key and sub-keys of \sectionformat for each sectionning command.

```

688 %% bookmarks styles for sectionning commands:
689 \@makeother\#
690 \itf@AfterPackage{interfaces-bookmark}{%
691     \itf@patch\itf@preapptocmd\addcontentsline % #2=section name in
692         {\begingroup\itf@ttl@BKM{/itf/titlesec/#2/bookmark}}% \addcontentsline
693         {\endgroup}
694         {\PackageInfo{interfaces-titlesec}
695             {Command \string\addcontentsline\space successfully patched!}}
696         {\PackageWarning{interfaces-titlesec}
697             {Patch of \string\addcontentsline\space failed
698             \MessageBreak bookmark-style specs for sections
699             \MessageBreak will be unavailable}}%
700 }% AfterPackage interfaces-bookmark
701 \catcode`\#=6
702 \def\itf@ttl@BKM#1{%
703     \pgfkeysifdefined{#1/.@cmd}
704         {%
705             \edef\itf@tp{\% do nothing if the keys are not set (shortcut)
706                 \pgfkeysvalueof{#1/bold}%
707                 \pgfkeysvalueof{#1/bold*}%
708                 \pgfkeysvalueof{#1/italic}%
709                 \pgfkeysvalueof{#1/italic*}%
710                 \pgfkeysvalueof{#1/color}%
711                 \pgfkeysvalueof{#1/color*}%
712                 \pgfkeysvalueof{#1/on}%
713                 \pgfkeysvalueof{#1/style}}%
714             \ifx\itf@tp\@empty
715             \else
716                 \global\pgfkeyslet{#1/bold*}\@empty
717                 \global\pgfkeyslet{#1/italic*}\@empty
718                 \global\pgfkeyslet{#1/color*}\@empty
719                 \expandafter\bookmarksetup\expandafter{\itf@tp}%
720                 \pgfkeysifdefined{/itf/bookmark/*}%
721                     {%
722                         \bookmarksetup{color*=} overwrites \sectionformat...{bookmark/color*=}
723                         \pgfkeysgetvalue{/itf/bookmark/*}\itf@tp
724                         \expandafter\bookmarksetup\expandafter{\itf@tp}%
725                     }
726             \fi}
727         }%
728     }%
729 }

```

```
727      {}%
728 }% \itf@ttl@BKM
```

#### 21.5.4 \bottomtitles

\bottomtitles This is a “skip command”: it can be assigned a number or a skip.

```
729 %-----%
730 %% b o t t o m t i t l e s
731 \newrobustcmd*\bottomtitles{\@ifnextchar\bgroup
732   \itf@setbottomtitlespace
733   {\afterassignment\itf@set@bottomtitle@space\itf@sk}%
734 }% \bottomtitles
735 \def\itf@setbottomtitlespace#1{%
736   \@defaultunits\itf@sk#1\textheight\relax\@nnil
737   \itf@set@bottomtitle@space
738 }% \itf@setbottomtitlespace
739 \def\itf@set@bottomtitle@space{\edef\bottomtitlespace{\the\dimexpr\itf@sk}}
```

  

```
740 </titlesec>
```

#### 21.6 Interface hyperref

```
741 (*hyperref)
742 \ProvidesPackage{interfaces-hyperref}
743   [2010/10/27 v1.2 provides raised hyperdef (FC)]
744 \RequirePackage{interfaces-base}
745 \itf@Check@Package{hyperref}
```

\raisedhyperdef The anchor is made with \Hy@raisedlink. The raised amount is used in \HyperRaiseLinkHook:

```
746 \newrobustcmd\raisedhyperdef[4][]{\begingroup
747   \ifblank{#1}{}
748   {}%
749   {}%
750   \expandafter\def\expandafter\HyperRaiseLinkHook\expandafter{%
751     \expandafter\def\expandafter\HyperRaiseLinkHook
752       \expandafter{\HyperRaiseLinkHook}% restore current definition
753       \HyperRaiseLinkHook
754       \advance\noexpand\HyperRaiseLinkLength by\dimexpr#1\relax\relax}%
755   }%
756   \ifx \\#2\\def \Hy@AnchorName {#3}\else
757     \def \Hy@AnchorName {#2.#3}%
758   \fi
759   \ltx@leavevmode
760   \Hy@raisedlink{\hyper@anchorstart{\Hy@AnchorName}\hyper@anchorend}%
761   \endgroup
762   #4%
763 }% \raisedhyperdef
```

  

```
764 </hyperref>
```

#### 21.7 Interface bookmark

```
765 (*bookmark)
766 \ProvidesPackage{interfaces-bookmark}
767   [2010/11/15 v2.1 more control on bookmarks (FC)]
768 \RequirePackage{interfaces-base}
769 \RequirePackage{interfaces-hyperref}
770 \RequirePackage{refcount}
771 \itf@Check@Package{bookmark}
772 \itf@pgfkeys
```

\bookmark (patch) Implementation of `disable`, and starred keys `*` (previous values must be restored after \write):

```

773 \expandafter\itf@patch\expandafter\patchcmd\csname\string\bookmark\endcsname
774   {\immediate\write\@mainaux}{\itf@BKM@write}
775   {\PackageInfo{interfaces-bookmark}}
776     {Command \expandafter\string\csname\string\bookmark\endcsname\space
777      successfully patched!}}
778   {\PackageWarning{interfaces-bookmark}}
779     {Command \expandafter\string\csname\string\bookmark\endcsname\space
780      could not be patched\MessageBreak
781      Loading of interfaces-bookmark is canceled}%
782   \endinput

```

### 21.7.1 star keys\* definitions

```

783 \global\let\itf@BKM@enable@ne % 0 = disable*, 1=enable, \@M = disable
784 \pgfqkeys{/itf/bookmark}{%
785   disable/.true=\global\let\itf@BKM@enable@\M,%
786   disable/.false=\global\let\itf@BKM@enable@ne,%
787   disable*/.true=\global\let\itf@BKM@enable\z@,%
788   disable*/.false=\global\let\itf@BKM@enable@ne,%
789   atend/.true=\ifnum\itf@BKM@enable>0\edef\itf@BKM@enable{\number-\itf@BKM@enable}\fi,%
790   atend/.false=\ifnum\itf@BKM@enable<0\edef\itf@BKM@enable{\number-\itf@BKM@enable}\fi,%
791   bold*/.true=\pgfqkeys{/itf/bookmark}{@save={bold=true}},%
792   bold*/.false=\pgfqkeys{/itf/bookmark}{@save={bold=false}},%
793   bold*/@blank/.code=\pgfqkeys{/itf/bookmark/@restore}{bold},%
794   bold*/.blank=@blank,%
795   italic*/.true=\pgfqkeys{/itf/bookmark}{@save={italic=true}},%
796   italic*/.false=\pgfkeys{/itf/bookmark}{@save={italic=false}},%
797   italic*/@blank/.code=\pgfqkeys{/itf/bookmark/@restore}{italic},%
798   italic*/.blank=@blank,%
799   color*/.code={\ifblank{#1}
800     {\pgfqkeys{/itf/bookmark/@restore}{color}}
801     {\pgfqkeys{/itf/bookmark}{@save={color={#1}}}}}}%
802 },%
803 @save/.code=%
804   \pgfkeysifdefined{/itf/bookmark/@save/color}{}
805     {\pgfkeyslet{/itf/bookmark/@save/color}\BKM@color}%
806   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}{}
807     {\pgfkeyslet{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}%
808   \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}{}
809     {\pgfkeysEsetvalue{/itf/bookmark/@save/grouplevel}{\the\currentgrouplevel}}%
810   \pgfkeysaddvalue{/itf/bookmark/*}{}{, #1}%
811   \bookmarksetup{#1}%
812 },%
813 @restore/color/.code=%
814   \pgfkeysifdefined{/itf/bookmark/@save/color}
815     {\pgfkeysgetvalue{/itf/bookmark/@save/color}\BKM@color}
816     {}},%
817 @restore/FontStyle/.code=%
818   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}
819     {\pgfkeysgetvalue{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}
820     {}},%
821 @restore/.code=%
822   \pgfkeysifdefined{/itf/bookmark/@save/color}
823     {\pgfkeysgetvalue{/itf/bookmark/@save/color}\BKM@color}
824     {}},%
825   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}
826     {\pgfkeysgetvalue{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}
827     {}},%
828   \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}
829     {% shortcut: \bookmarksetup{bold*} called inside main group (level 0)
830     \ifnum\pgfkeysvalueof{/itf/bookmark/@save/grouplevel}=\z@

```

```

831          \global\pgfkeyslet{/itf/bookmark/@save/FontStyle}@\undefined
832          \global\pgfkeyslet{/itf/bookmark/@save/color}@\undefined
833          \global\pgfkeyslet{/itf/bookmark/@save/grouplevel}@\undefined
834          \global\pgfkeyslet{/itf/bookmark/*}@\undefined
835          \global\let\BKM@color\BKM@color
836          \global\let\BS@BKM@FontStyle\BS@BKM@FontStyle
837      \else % restore after each group as needed
838          \pgfkeyslet{/itf/bookmark/@save/FontStyle}@\undefined
839          \pgfkeyslet{/itf/bookmark/@save/color}@\undefined
840          \pgfkeyslet{/itf/bookmark/*}@\undefined
841          \ifnum\currentgrouplevel>\z@
842              \aftergroup\itf@BKM@restore
843          \else
844              \pgfkeyslet{/itf/bookmark/@save/grouplevel}@\undefined
845      \fi\fi
846  }
847 { }%
848 } ,%
849 @restore/bold/.code={% bold is "hidden" in \BS@BKM@FontStyle
850     \begingroup
851         \edef\itf@tp{\bookmarkget{bold}}%
852         \pgfqkeys{/itf/bookmark@restore}{FontStyle}%
853         \count@=\bookmarkget{bold}%
854         \edef\itf@tp{\endgroup
855             \ifnum\itf@tp=\count@
856                 \else \noexpand\bookmarksetup{%
857                     bold\ifcase\count@ =false\fi}\fi
858             }\itf@tp},%
859 @restore/italic/.code={% italic is "hidden" in \BS@BKM@FontStyle
860     \begingroup
861         \edef\itf@tp{\bookmarkget{italic}}%
862         \pgfqkeys{/itf/bookmark@restore}{FontStyle}%
863         \count@=\bookmarkget{italic}%
864         \edef\itf@tp{\endgroup
865             \ifnum\itf@tp=\count@
866                 \else \noexpand\bookmarksetup{%
867                     italic\ifcase\count@ =false\fi}\fi
868             }\itf@tp},%
869 }
870 \def\itf@BKM@restore{%
871     \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}
872         {\pgfkeysalso{/itf/bookmark@restore}}
873     { }%
874 }% \itf@BKM@restore
875 %% Plug the BKM keys in the interfaces pgfkeys (not efficient but quickly written...)
876 \define@key{BKM}{disable}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/disable={#1}}}
877 \define@key{BKM}{disable*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/disable*={#1}}}
878 \define@key{BKM}{bold*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark:bold*={#1}}}
879 \define@key{BKM}{italic*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark:italic*={#1}}}
880 \define@key{BKM}{color*}[]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark:color*={#1}}}
881 \define@key{BKM}{atend}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/atend={#1}}}

```

\itf@BKM@write

- 1) check if the bookmark is disable
- 2) restore previous values in case starred\* keys have been set.

```

882 \def\itf@BKM@write#1{%
883     \aftergroup\itf@BKM@restore
884     \ifcase\itf@BKM@enable
885         \global\let\itf@BKM@enable\@ne
886     \or
887         \immediate\write\@mainaux{\#1}%
888     \else
889         \ifcase -\itf@BKM@enable % (case -0 = 0 tested before)
890             \or % (case -1 = enable but At End)
891                 \let\itf@BKM@enable\@ne

```

```

892         \edef\itf@tp{\immediate\write\@mainaux{#1}%
893             \expandafter\BookmarkAtEnd\expandafter{\itf@tp}%
894         \fi
895     \fi
896 }% \itf@BKM@write

```

### 21.7.2 ref and pageref keys

`\itf@BKM@pageref`

```

897 %% pageref= key for \bookmark (using refcount : \getpagerefnumber)
898 \def\itf@BKM@pageref[#1]{%
899   \expandafter\itf@BKM@@pageref
900   \csname r@#1\endcsname{#1}%
901 }% \itf@BKM@pageref
902 \def\itf@BKM@@pageref#1#2{%
903   \ifx#1\relax
904     \protect\G@refundefinedtrue
905     \@latex@warning{%
906       Hyper reference ‘#2’ on page \thepage \space undefined
907       \MessageBreak for bookmark destination page
908     }%
909   \fi
910   \edef\BKM@page{\getrefbykeydefault{#2}{page}{1}}%
911 }% \itf@BKM@pageref
912 \define@key{BKM}{pageref}{%
913   \Hy@babelnormalise\itf@BKM@pageref[{"#1"}]}

```

`\itf@BKM@ref`

```

914 %% ref= key for \bookmark
915 \def\itf@BKM@ref[#1]{%
916   \expandafter\itf@BKM@@ref
917   \csname r@#1\endcsname{#1}%
918 }% \itf@BKM@ref
919 \def\itf@BKM@@ref#1#2{%
920   \ifx#1\relax
921     \protect\G@refundefinedtrue
922     \@latex@warning{%
923       Hyper reference ‘#2’ on page \thepage \space undefined
924       \MessageBreak for bookmark destination
925     }%
926     \def\BKM@dest{??}%
927   \else
928     \edef\BKM@dest{\expandafter\@fourthoffive#1\empty\empty}%
929   \fi
930 }% \BKM@@ref
931 \define@key{BKM}{ref}{%
932   \Hy@babelnormalise\itf@BKM@ref[{"#1"}]}

```

933 </bookmark>

## 21.8 Interface `hypbmsec`

### 21.8.1 interfaces-hypbmsec

```

934 {*hypbmsec}
935 \ProvidesPackage{interfaces-hypbmsec}
936   [2010/11/15 v2.1 lastsection (title, anchor, etc. - FC)]
937 \RequirePackage{interfaces-base}
938 \RequirePackage{gettitledstring}
939 \itf@Check@Package{hypbmsec}

```

\hbs@do (patch)

```

940 \def\itf@hbs@do#1{%
941   \xdef\itf@hbs@currentname{\expandafter\itf@strip@at\string#1}%
942   \let\hbs@tocstring\relax % <for starred sections>
943   \let\hbs@bmstring\relax % <for starred sections>
944   \@ifstar
945     {\itf@hbs@ssect#1}%
946     {\let\hbs@seccmd=#1\hbs@checkarg}%
947 }% \itf@hbs@do
948 \let\hbs@do\itf@hbs@do

```

\hbs@process (patch)

```

949 \itf@patch\pretocmd\hbs@process{%
950   \itf@hbs@process{#1}%
951 }%
952 {\PackageInfo{interfaces-hypbmsec}{%
953   {Command \string\hbs@process\space successfully patched}}}
954 {\PackageWarning{interfaces-hypbmsec}{%
955   {Command \string\hbs@process\space could not be patched
956   \MessageBreak loading of ‘interfaces-hypbmsec’ aborted
957   \MessageBreak \string\lastsection\space will not work}%
958 \endinput}%

```

\itf@hbs@ssect For starred sections:

```

959 \long\def\itf@hbs@ssect#1#2{%
960   \itf@Not@titlesec#1
961   {\expandafter\itf@hbs@last@starred\expandafter{\itf@hbs@currentname}{#2}%
962   {\let\itf@hbs@last\itf@hbs@last@starred@ttl}%
963   #1*{#2}%
964 }% \itf@hbs@ssect

```

\itf@hbs@process For non-starred sections:

```

965 \long\def\itf@hbs@process#1{%
966   \itf@Not@titlesec \hbs@seccmd
967   %
968   \ifdef\hyper@anchor
969     \expandafter\itf@hbs@last@nostar@nottl@Hy\expandafter{\itf@hbs@currentname}{#1}%
970   \else
971     \expandafter\itf@hbs@last@nostar@nottl\expandafter{\itf@hbs@currentname}{#1}%
972   \fi
973   %
974   {\let\itf@hbs@last \itf@hbs@last@nostar@ttl}%
975 }% \itf@hbs@process

```

\itf@hbs@last@starred Update the values of \lastsectiontitle etc.. for starred sections:

```

976 \long\def\itf@hbs@last@starred#1#2{%
977   \GetTitleString{#2}\let\itf@hbs@currenttitle\GetTitleStringResult
978   \begin{group}
979     \let\@elt \itf@resetlastsections
980     \globaldefs \one
981     \expandafter\let\csname last#1title\endcsname\itf@hbs@currenttitle
982     \expandafter\let\csname last#1toc\endcsname\empty
983     \expandafter\let\csname last#1bookmark\endcsname\empty
984     \expandafter\let\csname last#1anchor\endcsname\relax
985     \let\lastsectionname \itf@hbs@currentname
986     \csname cl@#1\endcsname
987   \end{group}

```

```

988 }% \itf@hbs@last@starred
989 \def\itf@hbs@last@starred@ttl{% <expanded at \ttl@finmarks>
990   \global\let\itf@hbs@last \@empty
991   \expandafter\itf@hbs@last@starred
992     \expandafter\itf@hbs@currentname \expandafter{\ttl@savetitle}%
993 }% \itf@hbs@last@starred@ttl

```

`\itf@hbs@last@nostar` Update de values of `\lastsectiontitle` etc.. for non-starred sections:

```

\itf@hbs@last@nostar@ttl
994 \long\def\itf@hbs@last@nostar#1#2{%
\itf@hbs@last@nostar@nottl
995 \GetTitleString{#2}\let\itf@hbs@currenttitle\GetTitleStringResult
\itf@hbs@last@nostar@nottl@Hy
996 \begin{group}
997   \let\@elt \itf@resetlastsections
998   \globaldefs \@ne
999   \expandafter\let\csname last#1title\endcsname\itf@hbs@currenttitle
1000   \expandafter\let\csname last#1toc\expandafter\endcsname
1001     \csname \ifx\hbs@tocstring\relax
1002       \itf@hbs@currenttitle\else hbs@tocstring\fi \endcsname
1003   \expandafter\let\csname last#1bookmark\expandafter\endcsname
1004     \csname \ifx\hbs@bmstring\relax
1005       last#1toc\else hbs@bmstring\fi \endcsname
1006   \expandafter\let\csname last#1anchor\endcsname\HyperLocalCurrentHref
1007   \let\lastsectionname \itf@hbs@currentname
1008   \csname cl@#1\endcsname
1009 \endgroup
1010 }% \itf@hbs@last@starred
1011 \def\itf@hbs@last@nostar@ttl{% <expanded at \ttl@finmarks>
1012   \global\let\itf@hbs@last \@empty
1013   \expandafter\itf@hbs@last@nostar
1014     \expandafter\itf@hbs@currentname \expandafter{\ttl@savetitle}%
1015 }% \itf@hbs@last@nostar@ttl
1016 \long\def\itf@hbs@last@nostar@nottl#1#2{% <expanded at \cl@section>
1017   \expandafter\let\expandafter\itf@hbs@cl@ORI\csname cl@#1\endcsname
1018   \expandafter\def\csname cl@#1\endcsname{%
1019     \expandafter\let\csname cl@#1\endcsname\itf@hbs@cl@ORI
1020     \itf@hbs@cl@ORI
1021     \itf@hbs@last@nostar {#1}{#2}}%
1022 }% \itf@hbs@last@nostar@nottl
1023 \long\def\itf@hbs@last@nostar@nottl@Hy#1#2{% <expanded at \hyper@anchorend>
1024   \begin{group}
1025     \toks@\expandafter{%
1026       \expandafter\def\expandafter\hyper@anchorend
1027         \expandafter{\hyper@anchorend}%
1028       \itf@hbs@last@nostar {#1}{#2}}%
1029     \edef\x{\endgroup
1030       \def\noexpand\hyper@anchorend{\the\toks@}%
1031     }\x
1032 }% \itf@hbs@last@nostar@nottl@Hy

```

`\itf@Not@titlesec` Expands to `\@firstoftwo` if the section is not formatted by a class of `titlesec` package. Otherwise (`titlesec` formats the given section): expands to `\@secondoftwo`.

```

1033 \def\itf@Not@titlesec#1{\@firstoftwo}
1034 \AfterPackage*{titlesec}{%
1035 \def\itf@Not@titlesec#1{\begin{group}
1036   @onelvel@sanitize#1%
1037   \edef\@tempa{\noexpand\in@
1038     {\noexpand\nil \string\ttl@}
1039     {\noexpand\nil #1}%
1040   }\@tempa
1041   \expandafter\endgroup
1042   \ifin@ \expandafter\@secondoftwo
1043   \else \expandafter\@firstoftwo

```

```

1044   \fi
1045 }% \itf@Not@titlesec
1046 }% AfterPackage titlesec

```

\ttl@finmarks When `titlesec` is used, assignments to `\lastsectiontitle`, `\lastsubsectiontoc` etc.. are done at this point.

```

1047 \AfterPackage*{titlesec}{%
1048 \expandafter\def\expandafter\ttl@finmarks\expandafter{%
1049   \expandafter\itf@hbs@last \ttl@finmarks}%
1050 \let\itf@hbs@last \@empty
1051 }% AfterPackage

```

\itf@resetlastsections Assignments are global (`\globaldefs=1`).

```

1052 \def\itf@resetlastsections#1{%
1053   \expandafter\let\csname last#1title\endcsname\relax
1054   \expandafter\let\csname last#1toc\endcsname\relax
1055   \expandafter\let\csname last#1bookmark\endcsname\relax
1056   \expandafter\let\csname last#1anchor\endcsname\relax
1057   \csname cl@#1\endcsname
1058 }% \itf@resetlastsections

1059 \let\lastsectionname\relax
1060 @for\itf@tp:=part,section,subsection,subsubsection,paragraph,subparagraph%
1061 \do{\expandafter\let\csname last\itf@tp title\endcsname\relax
1062   \expandafter\let\csname last\itf@tp toc\endcsname\relax
1063   \expandafter\let\csname last\itf@tp bookmark\endcsname\relax
1064   \expandafter\let\csname last\itf@tp anchor\endcsname\relax
1065 }%
1066 \AtBeginDocument{\ifundefined\chapter{}%
1067   {\let\lastchaptertitle\relax
1068   \let\lastchaptertos\relax
1069   \let\lastchapterbookmark\relax
1070   \let\lastchapteranchor\relax}%
1071 }%
1072 /hypbmsec
```

## 21.9 `fancyhdr` : \pagestyle{}

```

1073 {*fancyhdr}
1074 \ProvidesPackage{interfaces-fancyhdr}
1075   [2010/11/26 v2.4 pgfkeys macros for fancyhdr (FC)]
1076 \RequirePackage{interfaces-base}
1077 \itf@Check@Package{fancyhdr}
1078 \itf@pgfkeys
1079 \robustify\fancyhf
1080 \robustify\fancyhffoffset

```

### 21.9.1 \pagestyle{}

\pagestyle

```

1081 \newrobustcmd*\pagestyle{%
1082   \let\fancy@gbl\relax % Just in case...
1083   \@ifstar
1084     {\itf@pagestyle{}}
1085     {\itf@pagestyle{reset,}}%
1086 }% \pagestyle
1087 \def\itf@pagestyle#1{@testopt
1088   {\itf@p@gesetup{#1}}{}%
1089 }% \itf@pagestyle

```

```

1090 \def\itf@p@gesetup#1[#2]#3{\ifblank{#2}
1091   {%
1092     \modifies{current page style}{\itf@pgfkeys{pgfkeys{/itf/fancyhdr}{#1#3}\relax\ps@@fancy}}%
1093   }%
1094   {\ifblank{#1}%
1095     \csappto{star form: keep existing value (if not overwritten)}{%
1096       \csdef{no star form: overwrite (+ reset at \pagestyle time)}{%
1097         \ps@#2{\itf@pgfkeys{pgfkeys{/itf/fancyhdr}{#1#3}\relax\ps@@fancy}}%
1098       }%
1099     }%
1100   }%
1101   @current/.is private=interfaces-fancyhdr,%
1102   @style/.is private=interfaces-fancyhdr,%
1103 }

```

## \pagestyle

```

1104 \renewrobustcmd*\pagestyle[1]{\ifcsundef{ps@#1}%
1105   {\itf@undefinedpagestyle{#1}}%
1106   {\csname ps@#1\endcsname}%
1107 }%

```

## \thispagestyle

```

1108 \renewrobustcmd*\thispagestyle[1]{\ifcsundef{ps@#1}%
1109   {\itf@undefinedpagestyle{#1}}%
1110   {\global\@specialpagetrue\gdef\@specialstyle{#1}}%
1111 }%

```

\thispagestyle

```

1112 \newcommand*\itf@undefinedpagestyle[1]{%
1113   \@latex@error{Undefined page style: #1}%
1114   \MessageBreak your command will be ignored}%
1115 }%

```

**21.9.2 Keys for \pagesetup**

```

1116 \pgfkeys{%
1117   /handlers/.fancy@hf/.code=%
1118   \edef\itf@tp{\pgfkeyscurrentpath}%
1119   \pgfkeysalso{\pgfkeyscurrentpath/.store as code=}%
1120   \pgfkeysalso{\pgfkeyscurrentpath/.append code/.expanded=%
1121     \csdef{f@ncy#1}{%
1122       \noexpand\pgfkeysvalueof{\itf@tp/font}%
1123       \noexpand\pgfkeysvalueof{\itf@tp}\noexpand\strut}},%
1124 }%

```

handler for fancyhdr interface

```

1125 \pgfqkeys{/itf/fancyhdr}{%
1126   code/.code={#1},% execution at expansion of \ps@... => \pgfqkeys{...,code={...}},...
1127   page style/.style={code=\pagestyle{#1}},%
1128   load style/.style=\pagestyle,%
1129   head/rule/.store as dimen in cs=headrulewidth,%
1130   head/rule/.default=.4pt,%
1131   head/rule/.blank=\z@,%
1132     head/rulewidth/.alias=page style,%
1133     headrulewidth/.alias=page style,%
1134     head/rule/width/.alias=page style,%
1135   head/rule/font/.store as code,%
1136   head/rule/color/.style={head/rule/font+=\color{#1}},%
1137   headruler/.code=%
1138     \let\headrule\pgfkeyscurrentvalue
1139     \ifx\headrule\empty\else
1140       \preto\headrule{\bgroup\pgfkeysvalueof{/itf/fancyhdr/head/rule/font}}%
1141     \fi

```

```

1142     \appto\headrule{\egroup}%
1143     \fi,%
1144     headruler/.default=%
1145         \if@fancyplain\let\headrulewidth\plainheadrulewidth\fi
1146         \hrule@height\headrulewidth \@width\headwidth
1147         \vskip-\headrulewidth\relax,%
1148     headrule/.alias=headruler,%
1149     headrule,% sets default
1150     foot/rule/.store as dimen in cs=footrulewidth,%
1151         foot/rule/.default=.4pt,%
1152         foot/rule/.blank=\z@,%
1153         foot/rulewidth/.alias*=foot/rule,%
1154         footrulewidth/.alias*=foot/rule,%
1155         foot/rule/width/.alias*=foot/rule,%
1156     foot/rule/font/.store as code,%
1157     foot/rule/color/.style={foot/rule/font+=\color{#1}},%
1158     footruler/.code=%
1159         \let\footrule\pgfkeyscurrentvalue
1160         \ifx\footrule\@empty\else
1161             \preto\footrule{\bgroup\pgfkeysvalueof{/itf/fancyhdr/head/rule/font}}%
1162             \appto\footrule{\egroup}
1163         \fi,%
1164     footruler/.default=%
1165         \if@fancyplain\let\footrulewidth\plainfootrulewidth\fi
1166         \vskip-2\footrulewidth
1167         \hrule@height\footrulewidth \@width\headwidth\vskip\footrulewidth,%
1168     footrule/.alias=footruler,%
1169     footrule,% sets default
1170     rule/.style={head/rule={#1},foot/rule={#1}},%
1171     rule+/.style={head/rule+={#1},foot/rule+={#1}},%
1172     rule-/.style={head/rule-={#1},foot/rule-={#1}},%
1173     rule*/.style={head/rule*={#1},foot/rule*={#1}},%
1174         rules/.alias*=rule,rulewidth/.alias*=rule,%
1175         rule/width/.alias*=rule,rules/width/.alias*=rule,%
1176     norule/.style={rule=\z@},%
1177     norule/.value forbidden,%
1178         norules/.alias=norule,%
1179     rule/font/.style={head/rule/font={#1},foot/rule/font={#1}},%
1180     rule/font+/.style={head/rule/font+={#1},foot/rule/font+={#1}},%
1181         rule/font*/.alias=rule/font+,%
1182         rules/font/.alias=rule/font,
1183         rules/font+/.alias=rule/font+,%
1184         rules/font*/.alias=rule/font+,%
1185     rule/color/.style={head/rule/color={#1},foot/rule/color={#1}},%
1186         rules/color/.alias=rule/color,%
1187     foot/rule/skip/.store as glue in cs=footruleskip,%
1188         foot/rule/skip/.default=.3\normalbaselineskip,%
1189         foot/rule/skip/.blank=\z@,%
1190         foot/ruleskip/.alias*=foot/rule/skip,%
1191         footruleskip/.alias*=foot/rule/skip,%
1192     font/.style={head/font={#1},foot/font={#1}},%
1193         font+/.style={head/font+={#1},foot/font+={#1}},%
1194         font*/.alias=font+,%
1195     color/.style={head/color={#1},foot/color={#1}},%
1196         head/rule/color={#1},foot/rule/color={#1},%
1197     head/.style={head/left={#1},head/center={#1},head/right={#1}},%
1198         head/font/.style={head/left/font={#1},head/center/font={#1},head/right/font={#1}},%
1199         head/font+/.style={head/left/font+={#1},head/center/font+={#1},head/right/font+={#1}},%
1200         head/font*/.alias=head/font+,%
1201         head/color/.style={head/left/color={#1},head/center/color={#1},head/right/color={#1}},%
1202             head/rule/color={#1},%
1203     nohead/.style={head=,head/font=,head/rule=,head/rule/font=},%
1204     foot/.style={foot/left={#1},foot/center={#1},foot/right={#1}},%
1205         foot/font/.style={foot/left/font={#1},foot/center/font={#1},foot/right/font={#1}},%
1206         foot/font+/.style={foot/left/font+={#1},foot/center/font+={#1},foot/right/font+={#1}},%

```

```

1207     foot/font*.alias=foot/font+,%
1208     foot/color/.style={foot/left/color={#1},foot/center/color={#1},foot/right/color={#1},%
1209                               foot/rule/color={#1}},%
1210     nofoot/.style={foot=,foot/font=,foot/rule=,foot/rule/font=},
1211     left/.style={head/left={#1},foot/left={#1}},%
1212       left/font/.style={head/left/font={#1},foot/left/font={#1}},%
1213       left/font+/.style={head/left/font+={#1},foot/left/font+={#1}},%
1214       left/font*/.alias=left/font+,%
1215       left/color/.style={head/left/color={#1},foot/left/color={#1}},%
1216     center/.style={head/center={#1},foot/center={#1}},%
1217       center/font/.style={head/center/font={#1},foot/center/font={#1}},%
1218       center/font+/.style={head/center/font+={#1},foot/center/font+={#1}},%
1219       center/font*/.alias=center/font+,%
1220       center/color/.style={head/center/color={#1},foot/center/color={#1}},%
1221     right/.style={head/right={#1},foot/right={#1}},%
1222       right/font/.style={head/right/font={#1},foot/right/font={#1}},%
1223       right/font+/.style={head/right/font+={#1},foot/right/font+={#1}},%
1224       right/font*/.alias=right/font+,%
1225       right/color/.style={head/right/color={#1},foot/right/color={#1}},%
1226   head/left/.style={head/left/even={#1},head/left/odd={#1}},%
1227     head/left/font/.style={head/left/even/font={#1},head/left/odd/font={#1}},%
1228     head/left/font+/.style={head/left/even/font+={#1},head/left/odd/font+={#1}},%
1229     head/left/font*/.alias=head/left/font+,%
1230     head/left/color/.style={head/left/even/color={#1},head/left/odd/color={#1}},%
1231       left/head/.alias=head/left,%
1232       left/head/font/.alias*=head/left/font,%
1233       left/head/color/.alias=head/left/color,%
1234   head/center/.style={head/center/even={#1},head/center/odd={#1}},%
1235     head/center/font/.style={head/center/even/font={#1},head/center/odd/font={#1}},%
1236     head/center/font+/.style={head/center/even/font+={#1},head/center/odd/font+={#1}},%
1237     head/center/font*/.alias=head/center/font+,%
1238     head/center/color/.style={head/center/even/color={#1},head/center/odd/color={#1}},%
1239       center/head/.alias=head/center,%
1240       center/head/font/.alias*=head/center/font,%
1241       center/head/color/.alias=head/center/color,%
1242   head/right/.style={head/right/even={#1},head/right/odd={#1}},%
1243     head/right/font/.style={head/right/even/font={#1},head/right/odd/font={#1}},%
1244     head/right/font+/.style={head/right/even/font+={#1},head/right/odd/font+={#1}},%
1245     head/right/font*/.alias=head/right/font+,%
1246     head/right/color/.style={head/right/even/color={#1},head/right/odd/color={#1}},%
1247       right/head/.alias=head/right,%
1248       right/head/font/.alias*=head/right/font,%
1249       right/head/color/.alias=head/right/color,%
1250   foot/left/.style={foot/left/even={#1},foot/left/odd={#1}},%
1251     foot/left/font/.style={foot/left/even/font={#1},foot/left/odd/font={#1}},%
1252     foot/left/font+/.style={foot/left/even/font+={#1},foot/left/odd/font+={#1}},%
1253     foot/left/font*/.alias=foot/left/font+,%
1254     foot/left/color/.style={foot/left/even/color={#1},foot/left/odd/color={#1}},%
1255       left/foot/.alias=foot/left,%
1256       left/foot/font/.alias*=foot/left/font,%
1257       left/foot/color/.alias=foot/left/color,%
1258   foot/center/.style={foot/center/even={#1},foot/center/odd={#1}},%
1259     foot/center/font/.style={foot/center/even/font={#1},foot/center/odd/font={#1}},%
1260     foot/center/font+/.style={foot/center/even/font+={#1},foot/center/odd/font+={#1}},%
1261     foot/center/font*/.alias=foot/center/font+,%
1262     foot/center/color/.style={foot/center/even/color={#1},foot/center/odd/color={#1}},%
1263       center/foot/.alias=foot/center,%
1264       center/foot/font/.alias*=foot/center/font,%
1265       center/foot/color/.alias=foot/center/color,%
1266   foot/right/.style={foot/right/even={#1},foot/right/odd={#1}},%
1267     foot/right/font/.style={foot/right/even/font={#1},foot/right/odd/font={#1}},%
1268     foot/right/font+/.style={foot/right/even/font+={#1},foot/right/odd/font+={#1}},%
1269     foot/right/font*/.alias=foot/right/font+,%
1270     foot/right/color/.style={foot/right/even/color={#1},foot/right/odd/color={#1}},%
1271       right/foot/.alias=foot/right,%

```

```

1272     right/foot/font/.alias*=foot/right/font,%
1273     right/foot/color/.alias=foot/right/color,%
1274 head/left/odd/.fancy@hf=olh,%
1275 head/left/odd/font/.store as code,%
1276 head/left/odd/color/.style={head/left/odd/font+=\color{#1}},%
1277     head/odd/left/.alias=head/left/odd,%
1278     odd/head/left/.alias=head/left/odd,%
1279     odd/left/head/.alias=head/left/odd,%
1280     left/odd/head/.alias=head/left/odd,%
1281     left/head/odd/.alias=head/left/odd,%
1282     head/odd/left/font/.alias*=head/left/odd/font,%
1283     odd/head/left/font/.alias*=head/left/odd/font,%
1284     odd/left/head/font/.alias*=head/left/odd/font,%
1285     left/odd/head/font/.alias*=head/left/odd/font,%
1286     left/head/odd/font/.alias*=head/left/odd/font,%
1287     head/odd/left/color/.alias=head/left/odd/color,%
1288     odd/head/left/color/.alias=head/left/odd/color,%
1289     odd/left/head/color/.alias=head/left/odd/color,%
1290     left/odd/head/color/.alias=head/left/odd/color,%
1291     left/head/odd/color/.alias=head/left/odd/color,%
1292 head/center/odd/.fancy@hf=och,%
1293 head/center/odd/font/.store as code,%
1294 head/center/odd/color/.style={head/center/odd/font+=\color{#1}},%
1295     head/odd/center/.alias=head/center/odd,%
1296     odd/head/center/.alias=head/center/odd,%
1297     odd/center/head/.alias=head/center/odd,%
1298     center/odd/head/.alias=head/center/odd,%
1299     center/head/odd/.alias=head/center/odd,%
1300     head/odd/center/font/.alias*=head/center/odd/font,%
1301     odd/head/center/font/.alias*=head/center/odd/font,%
1302     odd/center/head/font/.alias*=head/center/odd/font,%
1303     center/odd/head/font/.alias*=head/center/odd/font,%
1304     center/head/odd/font/.alias*=head/center/odd/font,%
1305     head/odd/center/color/.alias=head/center/odd/color,%
1306     odd/head/center/color/.alias=head/center/odd/color,%
1307     odd/center/head/color/.alias=head/center/odd/color,%
1308     center/odd/head/color/.alias=head/center/odd/color,%
1309     center/head/odd/color/.alias=head/center/odd/color,%
1310 head/right/odd/.fancy@hf=orh,%
1311 head/right/odd/font/.store as code,%
1312 head/right/odd/color/.style={head/right/odd/font+=\color{#1}},%
1313     head/odd/right/.alias=head/right/odd,%
1314     odd/head/right/.alias=head/right/odd,%
1315     odd/right/head/.alias=head/right/odd,%
1316     right/odd/head/.alias=head/right/odd,%
1317     right/head/odd/.alias=head/right/odd,%
1318     head/odd/right/font/.alias*=head/right/odd/font,%
1319     odd/head/right/font/.alias*=head/right/odd/font,%
1320     odd/right/head/font/.alias*=head/right/odd/font,%
1321     right/odd/head/font/.alias*=head/right/odd/font,%
1322     right/head/odd/font/.alias*=head/right/odd/font,%
1323     head/odd/right/color/.alias=head/right/odd/color,%
1324     odd/head/right/color/.alias=head/right/odd/color,%
1325     odd/right/head/color/.alias=head/right/odd/color,%
1326     right/odd/head/color/.alias=head/right/odd/color,%
1327     right/head/odd/color/.alias=head/right/odd/color,%
1328 head/left/even/.fancy@hf=elh,%
1329 head/left/even/font/.store as code,%
1330 head/left/even/color/.style={head/left/even/font+=\color{#1}},%
1331     head/even/left/.alias=head/left/even,%
1332     even/head/left/.alias=head/left/even,%
1333     even/left/head/.alias=head/left/even,%
1334     left/even/head/.alias=head/left/even,%
1335     left/head/even/.alias=head/left/even,%
1336     head/even/left/font/.alias*=head/left/even/font,%

```

```

1337 even/head/left/font/.alias*=head/left/even/font,%
1338 even/left/head/font/.alias*=head/left/even/font,%
1339 left/even/head/font/.alias*=head/left/even/font,%
1340 left/head/even/font/.alias*=head/left/even/font,%
1341 head/even/left/color/.alias=head/left/even/color,%
1342 even/head/left/color/.alias=head/left/even/color,%
1343 even/left/head/color/.alias=head/left/even/color,%
1344 left/even/head/color/.alias=head/left/even/color,%
1345     left/head/even/color/.alias=head/left/even/color,%
1346 head/center/even/.fancy@hf=ech,%
1347 head/center/even/font/.store as code,%
1348 head/center/even/color/.style={head/center/even/font+=\color{#1}},%
1349     head/center/.alias=head/center/even,%
1350 even/head/center/.alias=head/center/even,%
1351 even/center/head/.alias=head/center/even,%
1352 center/even/head/.alias=head/center/even,%
1353 center/head/even/.alias=head/center/even,%
1354 head/even/center/font/.alias*=head/center/even/font,%
1355 even/head/center/font/.alias*=head/center/even/font,%
1356 even/center/head/font/.alias*=head/center/even/font,%
1357 center/even/head/font/.alias*=head/center/even/font,%
1358 center/head/even/font/.alias*=head/center/even/font,%
1359 head/even/center/color/.alias=head/center/even/color,%
1360 even/head/center/color/.alias=head/center/even/color,%
1361 even/center/head/color/.alias=head/center/even/color,%
1362 center/even/head/color/.alias=head/center/even/color,%
1363 center/head/even/color/.alias=head/center/even/color,%
1364 head/right/even/.fancy@hf=erh,%
1365 head/right/even/font/.store as code,%
1366 head/right/even/color/.style={head/right/even/font+=\color{#1}},%
1367     head/even/right/.alias=head/right/even,%
1368 even/head/right/.alias=head/right/even,%
1369 even/right/head/.alias=head/right/even,%
1370 right/even/head/.alias=head/right/even,%
1371 right/head/even/.alias=head/right/even,%
1372 head/even/right/font/.alias*=head/right/even/font,%
1373 even/head/right/font/.alias*=head/right/even/font,%
1374 even/right/head/font/.alias*=head/right/even/font,%
1375 right/even/head/font/.alias*=head/right/even/font,%
1376 right/head/even/font/.alias*=head/right/even/font,%
1377 head/even/right/color/.alias=head/right/even/color,%
1378 even/head/right/color/.alias=head/right/even/color,%
1379 even/right/head/color/.alias=head/right/even/color,%
1380 right/even/head/color/.alias=head/right/even/color,%
1381 right/head/even/color/.alias=head/right/even/color,%
1382 foot/left/odd/.fancy@hf=olf,%
1383 foot/left/odd/font/.store as code,%
1384 foot/left/odd/color/.style={foot/left/odd/font+=\color{#1}},%
1385     foot/odd/left/.alias=foot/left/odd,%
1386 odd/foot/left/.alias=foot/left/odd,%
1387 odd/left/foot/.alias=foot/left/odd,%
1388 left/odd/foot/.alias=foot/left/odd,%
1389 left/foot/odd/.alias=foot/left/odd,%
1390 foot/odd/left/font/.alias*=foot/left/odd/font,%
1391 odd/foot/left/font/.alias*=foot/left/odd/font,%
1392 odd/left/foot/font/.alias*=foot/left/odd/font,%
1393 left/odd/foot/font/.alias*=foot/left/odd/font,%
1394 left/foot/odd/font/.alias*=foot/left/odd/font,%
1395 foot/odd/left/color/.alias=foot/left/odd/color,%
1396 odd/foot/left/color/.alias=foot/left/odd/color,%
1397 odd/left/foot/color/.alias=foot/left/odd/color,%
1398 left/odd/foot/color/.alias=foot/left/odd/color,%
1399 left/foot/odd/color/.alias=foot/left/odd/color,%
1400 foot/center/odd/.fancy@hf=ocf,%
1401 foot/center/odd/font/.store as code,%

```

```

1402   foot/center/odd/color/.style={foot/center/odd/font+=\color{#1}},%
1403     foot/odd/center/.alias=foot/center/odd,%
1404     odd/foot/center/.alias=foot/center/odd,%
1405     odd/center/foot/.alias=foot/center/odd,%
1406     center/odd/foot/.alias=foot/center/odd,%
1407     center/foot/odd/.alias=foot/center/odd,%
1408     foot/odd/center/font/.alias*=foot/center/odd/font,%
1409     odd/foot/center/font/.alias*=foot/center/odd/font,%
1410     odd/center/foot/font/.alias*=foot/center/odd/font,%
1411     center/odd/foot/font/.alias*=foot/center/odd/font,%
1412     center/foot/odd/font/.alias*=foot/center/odd/font,%
1413     foot/odd/center/color/.alias=foot/center/odd/color,%
1414     odd/foot/center/color/.alias=foot/center/odd/color,%
1415     odd/center/foot/color/.alias=foot/center/odd/color,%
1416     center/odd/foot/color/.alias=foot/center/odd/color,%
1417     center/foot/odd/color/.alias=foot/center/odd/color,%
1418   foot/right/odd/.fancy@hf=orf,%
1419   foot/right/odd/font/.store as code,%
1420   foot/right/odd/color/.style={foot/right/odd/font+=\color{#1}},%
1421     foot/odd/right/.alias=foot/right/odd,%
1422     odd/foot/right/.alias=foot/right/odd,%
1423     odd/right/foot/.alias=foot/right/odd,%
1424     right/odd/foot/.alias=foot/right/odd,%
1425     right/foot/odd/.alias=foot/right/odd,%
1426     foot/odd/right/font/.alias*=foot/right/odd/font,%
1427     odd/foot/right/font/.alias*=foot/right/odd/font,%
1428     odd/right/foot/font/.alias*=foot/right/odd/font,%
1429     right/odd/foot/font/.alias*=foot/right/odd/font,%
1430     right/foot/odd/font/.alias*=foot/right/odd/font,%
1431     foot/odd/right/color/.alias=foot/right/odd/color,%
1432     odd/foot/right/color/.alias=foot/right/odd/color,%
1433     odd/right/foot/color/.alias=foot/right/odd/color,%
1434     right/odd/foot/color/.alias=foot/right/odd/color,%
1435     right/foot/odd/color/.alias=foot/right/odd/color,%
1436   foot/left/even/.fancy@hf=elf,%
1437   foot/left/even/font/.store as code,%
1438   foot/left/even/color/.style={foot/left/even/font+=\color{#1}},%
1439     foot/even/left/.alias=foot/left/even,%
1440     even/foot/left/.alias=foot/left/even,%
1441     even/left/foot/.alias=foot/left/even,%
1442     left/even/foot/.alias=foot/left/even,%
1443     left/foot/even/.alias=foot/left/even,%
1444     foot/even/left/font/.alias*=foot/left/even/font,%
1445     even/foot/left/font/.alias*=foot/left/even/font,%
1446     even/left/foot/font/.alias*=foot/left/even/font,%
1447     left/even/foot/font/.alias*=foot/left/even/font,%
1448     left/foot/even/font/.alias*=foot/left/even/font,%
1449     foot/even/left/color/.alias=foot/left/even/color,%
1450     even/foot/left/color/.alias=foot/left/even/color,%
1451     even/left/foot/color/.alias=foot/left/even/color,%
1452     left/even/foot/color/.alias=foot/left/even/color,%
1453     left/foot/even/color/.alias=foot/left/even/color,%
1454   foot/center/even/.fancy@hf=ecf,%
1455   foot/center/even/font/.store as code,%
1456   foot/center/even/color/.style={foot/center/even/font+=\color{#1}},%
1457     foot/even/center/.alias=foot/center/even,%
1458     even/foot/center/.alias=foot/center/even,%
1459     even/center/foot/.alias=foot/center/even,%
1460     center/even/foot/.alias=foot/center/even,%
1461     center/foot/even/.alias=foot/center/even,%
1462     foot/even/center/font/.alias*=foot/center/even/font,%
1463     even/foot/center/font/.alias*=foot/center/even/font,%
1464     even/center/foot/font/.alias*=foot/center/even/font,%
1465     center/even/foot/font/.alias*=foot/center/even/font,%
1466     center/foot/even/font/.alias*=foot/center/even/font,%

```

```

1467     foot/even/center/color/.alias=foot/center/even/color,%
1468     even/foot/center/color/.alias=foot/center/even/color,%
1469     even/center/foot/color/.alias=foot/center/even/color,%
1470     center/even/foot/color/.alias=foot/center/even/color,%
1471     center/foot/even/color/.alias=foot/center/even/color,%
1472     foot/right/even/.fancy@hf=erf,%
1473     foot/right/even/font/.store as code,%
1474     foot/right/even/color/.style={foot/right/even/font+=\color{#1}},%
1475         foot/even/right/.alias=foot/right/even,%
1476         even/foot/right/.alias=foot/right/even,%
1477         even/right/foot/.alias=foot/right/even,%
1478         right/even/foot/.alias=foot/right/even,%
1479         right/foot/even/.alias=foot/right/even,%
1480         foot/even/right/font/.alias*=foot/right/even/font,%
1481         even/foot/right/font/.alias*=foot/right/even/font,%
1482         even/right/foot/font/.alias*=foot/right/even/font,%
1483         right/even/foot/font/.alias*=foot/right/even/font,%
1484         right/foot/even/font/.alias*=foot/right/even/font,%
1485         foot/even/right/color/.alias=foot/right/even/color,%
1486         even/foot/right/color/.alias=foot/right/even/color,%
1487         even/right/foot/color/.alias=foot/right/even/color,%
1488         right/even/foot/color/.alias=foot/right/even/color,%
1489             right/foot/even/color/.alias=foot/right/even/color,%
1490     foot/inner/.style={foot/right/even={#1},foot/left/odd={#1}},%
1491     foot/inner/font/.style={foot/right/even/font={#1},foot/left/odd/font={#1}},%
1492     foot/inner/color/.style={foot/right/even/color={#1},foot/left/odd/color={#1}},%
1493     foot/inner/font+/.style={foot/right/even/font+={#1},foot/left/odd/font+={#1}},%
1494     foot/inner/font*/.alias=foot/inner/font+,%
1495         inner/foot/.alias=foot/inner,%
1496         inner/foot/font/.alias*=foot/inner/font,%
1497         inner/foot/color/.alias=foot/inner/color,%
1498     foot/outer/.style={foot/left/even={#1},foot/right/odd={#1}},%
1499     foot/outer/font/.style={foot/left/even/font={#1},foot/right/odd/font={#1}},%
1500     foot/outer/color/.style={foot/left/even/color={#1},foot/right/odd/color={#1}},%
1501     foot/outer/font+/.style={foot/left/even/font+={#1},foot/right/odd/font+={#1}},%
1502     foot/outer/font*/.alias=foot/outer/font+,%
1503         outer/foot/.alias=foot/outer,%
1504         outer/foot/font/.alias*=foot/outer/font,%
1505         outer/foot/color/.alias=foot/outer/color,%
1506     head/inner/.style={head/right/even={#1},head/left/odd={#1}},%
1507     head/inner/font/.style={head/right/even/font={#1},head/left/odd/font={#1}},%
1508     head/inner/color/.style={head/right/even/color={#1},head/left/odd/color={#1}},%
1509     head/inner/font+/.style={head/right/even/font+={#1},head/left/odd/font+={#1}},%
1510     head/inner/font*/.alias=head/inner/font+,%
1511         inner/head/.alias=head/inner,%
1512         inner/head/font/.alias*=head/inner/font,%
1513         inner/head/color/.alias=head/inner/color,%
1514     head/outer/.style={head/left/even={#1},head/right/odd={#1}},%
1515     head/outer/font/.style={head/left/even/font={#1},head/right/odd/font={#1}},%
1516     head/outer/color/.style={head/left/even/color={#1},head/right/odd/color={#1}},%
1517     head/outer/font+/.style={head/left/even/font+={#1},head/right/odd/font+={#1}},%
1518     head/outer/font*/.alias=head/outer/font+,%
1519         outer/head/.alias=head/outer,%
1520         outer/head/font/.alias*=head/outer/font,%
1521         outer/head/color/.alias=head/outer/color,%
1522     inner/.style={foot/inner={#1},head/inner={#1}},%
1523     inner/font/.style={foot/inner/font={#1},head/inner/font={#1}},%
1524     inner/font+/.style={foot/inner/font+={#1},head/inner/font+={#1}},%
1525     inner/font*/.alias=inner/font+,%
1526     inner/color/.style={foot/inner/color={#1},head/inner/color={#1}},%
1527     outer/.style={foot/outer={#1},head/outer={#1}},%
1528     outer/font/.style={foot/outer/font={#1},head/outer/font={#1}},%
1529     outer/font+/.style={foot/outer/font+={#1},head/outer/font+={#1}},%
1530     outer/font*/.alias=outer/font+,%
1531     outer/color/.style={foot/outer/color={#1},head/outer/color={#1}},%

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1532   offset/.style={head/offset={#1},foot/offset={#1}},%
1533   offset+/.style={head/offset+={#1},foot/offset+={#1}},%
1534   offset-/.style={head/offset-={#1},foot/offset-={#1}},%
1535   offset*/.style={head/offset*={#1},foot/offset*={#1}},%
1536 head/offset/.style={head/left/offset={#1},head/right/offset={#1}},%
1537 head/offset+/.style={head/left/offset+={#1},head/right/offset+={#1}},%
1538 head/offset-/.style={head/left/offset-={#1},head/right/offset-={#1}},%
1539 head/offset*/.style={head/left/offset*={#1},head/right/offset*={#1}},%
1540   offset/head/.alias*=head/offset,%
1541 foot/offset/.style={foot/left/offset={#1},foot/right/offset={#1}},%
1542 foot/offset+/.style={foot/left/offset+={#1},foot/right/offset+={#1}},%
1543 foot/offset-/.style={foot/left/offset-={#1},foot/right/offset-={#1}},%
1544 foot/offset*/.style={foot/left/offset*={#1},foot/right/offset*={#1}},%
1545   offset/foot/.alias*=foot/offset,%
1546 odd/offset/.style={left/odd/offset={#1},right/odd/offset={#1}},%
1547 odd/offset+/.style={left/odd/offset+={#1},right/odd/offset+={#1}},%
1548 odd/offset-/.style={left/odd/offset-={#1},right/odd/offset-={#1}},%
1549   offset/odd/.alias*=odd/offset,%
1550 even/offset/.style={left/even/offset={#1},right/even/offset={#1}},%
1551 even/offset+/.style={left/even/offset+={#1},right/even/offset+={#1}},%
1552 even/offset-/.style={left/even/offset-={#1},right/even/offset-={#1}},%
1553   offset/even/.alias*=even/offset,%
1554 left/offset/.style={foot/left/offset={#1},head/left/offset={#1}},%
1555 left/offset+/.style={foot/left/offset+={#1},head/left/offset+={#1}},%
1556 left/offset-/.style={foot/left/offset-={#1},head/left/offset-={#1}},%
1557 left/offset*/.style={foot/left/offset*={#1},head/left/offset*={#1}},%
1558   offset/left/.alias*=left/offset,%
1559 left/even/offset/.style={foot/left/even/offset={#1},head/left/even/offset={#1}},%
1560 left/even/offset+/.style={foot/left/even/offset+={#1},head/left/even/offset+={#1}},%
1561 left/even/offset-/.style={foot/left/even/offset-={#1},head/left/even/offset-={#1}},%
1562 left/even/offset*/.style={foot/left/even/offset*={#1},head/left/even/offset*={#1}},%
1563   left/offset/even/.alias*=left/even/offset,%
1564 even/left/offset/.alias*=left/even/offset,%
1565 even/offset/left/.alias*=left/even/offset,%
1566 offset/even/left/.alias*=left/even/offset,%
1567 offset/left/even/.alias*=left/even/offset,%
1568 left/odd/offset/.style={foot/left/odd/offset={#1},head/left/odd/offset={#1}},%
1569 left/odd/offset+/.style={foot/left/odd/offset+={#1},head/left/odd/offset+={#1}},%
1570 left/odd/offset-/.style={foot/left/odd/offset-={#1},head/left/odd/offset-={#1}},%
1571 left/odd/offset*/.style={foot/left/odd/offset*={#1},head/left/odd/offset*={#1}},%
1572   left/offset/odd/.alias*=left/odd/offset,%
1573 odd/left/offset/.alias*=left/odd/offset,%
1574 odd/offset/left/.alias*=left/odd/offset,%
1575 offset/odd/left/.alias*=left/odd/offset,%
1576 offset/left/odd/.alias*=left/odd/offset,%
1577 right/offset/.style={foot/right/offset={#1},head/right/offset={#1}},%
1578 right/offset+/.style={foot/right/offset+={#1},head/right/offset+={#1}},%
1579 right/offset-/.style={foot/right/offset-={#1},head/right/offset-={#1}},%
1580 right/offset*/.style={foot/right/offset*={#1},head/right/offset*={#1}},%
1581   offset/right/.alias*=right/offset,%
1582 right/even/offset/.style={foot/right/even/offset={#1},head/right/even/offset={#1}},%
1583 right/even/offset+/.style={foot/right/even/offset+={#1},head/right/even/offset+={#1}},%
1584 right/even/offset-/.style={foot/right/even/offset-={#1},head/right/even/offset-={#1}},%
1585 right/even/offset*/.style={foot/right/even/offset*={#1},head/right/even/offset*={#1}},%
1586   right/offset/even/.alias*=right/even/offset,%
1587 even/right/offset/.alias*=right/even/offset,%
1588 even/offset/right/.alias*=right/even/offset,%
1589 offset/even/right/.alias*=right/even/offset,%
1590 offset/right/even/.alias*=right/even/offset,%
1591 right/odd/offset/.style={foot/right/odd/offset={#1},head/right/odd/offset={#1}},%
1592 right/odd/offset+/.style={foot/right/odd/offset+={#1},head/right/odd/offset+={#1}},%
1593 right/odd/offset-/.style={foot/right/odd/offset-={#1},head/right/odd/offset-={#1}},%
1594 right/odd/offset*/.style={foot/right/odd/offset*={#1},head/right/odd/offset*={#1}},%
1595   right/offset/odd/.alias*=right/odd/offset,%
1596 odd/right/offset/.alias*=right/odd/offset,%

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1597     odd/offset/right/.alias*=right/odd/offset,%
1598     offset/odd/right/.alias*=right/odd/offset,%
1599     offset/right/odd/.alias*=right/odd/offset,%
1600 head/left/offset/.style={head/left/even/offset={#1},head/left/odd/offset={#1}},%
1601     head/left/offset+/.style={head/left/even/offset+={#1},head/left/odd/offset+={#1}},%
1602     head/left/offset-/.style={head/left/even/offset-={#1},head/left/odd/offset-={#1}},%
1603     head/left/offset*/.style={head/left/even/offset*={#1},head/left/odd/offset*={#1}},%
1604         head/offset/left/.alias*=head/left/offset,%
1605         left/head/offset/.alias*=head/left/offset,%
1606         left/offset/head/.alias*=head/left/offset,%
1607         offset/head/left/.alias*=head/left/offset,%
1608         offset/left/head/.alias*=head/left/offset,%
1609 head/right/offset/.style={head/right/even/offset={#1},head/right/odd/offset={#1}},%
1610     head/right/offset+/.style={head/right/even/offset+={#1},head/right/odd/offset+={#1}},%
1611     head/right/offset-/.style={head/right/even/offset-={#1},head/right/odd/offset-={#1}},%
1612     head/right/offset*/.style={head/right/even/offset*={#1},head/right/odd/offset*={#1}},%
1613         head/offset/right/.alias*=head/right/offset,%
1614         right/head/offset/.alias*=head/right/offset,%
1615         right/offset/head/.alias*=head/right/offset,%
1616         offset/head/right/.alias*=head/right/offset,%
1617         offset/right/head/.alias*=head/right/offset,%
1618 foot/left/offset/.style={foot/left/even/offset={#1},foot/left/odd/offset={#1}},%
1619     foot/left/offset+/.style={foot/left/even/offset+={#1},foot/left/odd/offset+={#1}},%
1620     foot/left/offset-/.style={foot/left/even/offset-={#1},foot/left/odd/offset-={#1}},%
1621     foot/left/offset*/.style={foot/left/even/offset*={#1},foot/left/odd/offset*={#1}},%
1622         foot/offset/left/.alias*=foot/left/offset,%
1623         left/foot/offset/.alias*=foot/left/offset,%
1624         left/offset/foot/.alias*=foot/left/offset,%
1625         offset/foot/left/.alias*=foot/left/offset,%
1626         offset/left/foot/.alias*=foot/left/offset,%
1627 foot/right/offset/.style={foot/right/even/offset={#1},foot/right/odd/offset={#1}},%
1628     foot/right/offset+/.style={foot/right/even/offset+={#1},foot/right/odd/offset+={#1}},%
1629     foot/right/offset-/.style={foot/right/even/offset-={#1},foot/right/odd/offset-={#1}},%
1630     foot/right/offset*/.style={foot/right/even/offset*={#1},foot/right/odd/offset*={#1}},%
1631         foot/offset/right/.alias*=foot/right/offset,%
1632         right/foot/offset/.alias*=foot/right/offset,%
1633         right/offset/foot/.alias*=foot/right/offset,%
1634         offset/foot/right/.alias*=foot/right/offset,%
1635         offset/right/foot/.alias*=foot/right/offset,%
1636 head/left/even/offset/.store in skip cs=f@ncy0@elh,%
1637     head/left/even/offset/.append code=\fancy@setoffs,%
1638         head/even/offset/left/.alias*=head/left/even/offset,%
1639         head/even/left/offset/.alias*=head/left/even/offset,%
1640         head/offset/even/left/.alias*=head/left/even/offset,%
1641         head/offset/left/even/.alias*=head/left/even/offset,%
1642         head/left/offset/even/.alias*=head/left/even/offset,%
1643         left/head/offset/even/.alias*=head/left/even/offset,%
1644         left/head/even/offset/.alias*=head/left/even/offset,%
1645         left/offset/head/even/.alias*=head/left/even/offset,%
1646         left/offset/even/head/.alias*=head/left/even/offset,%
1647         left/even/offset/head/.alias*=head/left/even/offset,%
1648         left/even/head/offset/.alias*=head/left/even/offset,%
1649         even/head/offset/left/.alias*=head/left/even/offset,%
1650         even/head/left/offset/.alias*=head/left/even/offset,%
1651         even/offset/head/left/.alias*=head/left/even/offset,%
1652         even/offset/left/head/.alias*=head/left/even/offset,%
1653         even/left/offset/head/.alias*=head/left/even/offset,%
1654         even/left/head/offset/.alias*=head/left/even/offset,%
1655         offset/head/left/even/.alias*=head/left/even/offset,%
1656         offset/head/even/left/.alias*=head/left/even/offset,%
1657         offset/left/head/even/.alias*=head/left/even/offset,%
1658         offset/left/even/head/.alias*=head/left/even/offset,%
1659         offset/even/left/head/.alias*=head/left/even/offset,%
1660         offset/even/head/left/.alias*=head/left/even/offset,%
1661 head/left/odd/offset/.store in skip cs=f@ncy0@olh,%

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1662     head/left/odd/offset/.append code=\fancy@setoffs,%
1663     head/odd/offset/left/.alias*=head/left/odd/offset,%
1664     head/odd/left/offset/.alias*=head/left/odd/offset,%
1665     head/offset/odd/left/.alias*=head/left/odd/offset,%
1666     head/offset/left/odd/.alias*=head/left/odd/offset,%
1667     head/left/offset/odd/.alias*=head/left/odd/offset,%
1668     left/head/offset/odd/.alias*=head/left/odd/offset,%
1669     left/head/odd/offset/.alias*=head/left/odd/offset,%
1670     left/offset/head/odd/.alias*=head/left/odd/offset,%
1671     left/offset/odd/head/.alias*=head/left/odd/offset,%
1672     left/odd/offset/head/.alias*=head/left/odd/offset,%
1673     left/odd/head/offset/.alias*=head/left/odd/offset,%
1674     odd/head/offset/left/.alias*=head/left/odd/offset,%
1675     odd/head/left/offset/.alias*=head/left/odd/offset,%
1676     odd/offset/head/left/.alias*=head/left/odd/offset,%
1677     odd/offset/left/head/.alias*=head/left/odd/offset,%
1678     odd/left/offset/head/.alias*=head/left/odd/offset,%
1679     odd/left/head/offset/.alias*=head/left/odd/offset,%
1680     offset/head/left/odd/.alias*=head/left/odd/offset,%
1681     offset/head/odd/left/.alias*=head/left/odd/offset,%
1682     offset/left/head/odd/.alias*=head/left/odd/offset,%
1683     offset/left/odd/head/.alias*=head/left/odd/offset,%
1684     offset/odd/left/head/.alias*=head/left/odd/offset,%
1685     offset/odd/head/left/.alias*=head/left/odd/offset,%
1686 head/right/even/offset/.store in skip cs=f@ncy0@erh,%
1687     head/right/even/offset/.append code=\fancy@setoffs,%
1688     head/even/offset/right/.alias*=head/right/even/offset,%
1689     head/even/right/offset/.alias*=head/right/even/offset,%
1690     head/offset/even/right/.alias*=head/right/even/offset,%
1691     head/offset/right/even/.alias*=head/right/even/offset,%
1692     head/right/offset/even/.alias*=head/right/even/offset,%
1693     right/head/offset/even/.alias*=head/right/even/offset,%
1694     right/head/even/offset/.alias*=head/right/even/offset,%
1695     right/offset/head/even/.alias*=head/right/even/offset,%
1696     right/offset/even/head/.alias*=head/right/even/offset,%
1697     right/even/offset/head/.alias*=head/right/even/offset,%
1698     right/even/head/offset/.alias*=head/right/even/offset,%
1699     even/head/offset/right/.alias*=head/right/even/offset,%
1700     even/head/right/offset/.alias*=head/right/even/offset,%
1701     even/offset/head/right/.alias*=head/right/even/offset,%
1702     even/offset/right/head/.alias*=head/right/even/offset,%
1703     even/right/offset/head/.alias*=head/right/even/offset,%
1704     even/right/head/offset/.alias*=head/right/even/offset,%
1705     offset/head/right/even/.alias*=head/right/even/offset,%
1706     offset/head/even/right/.alias*=head/right/even/offset,%
1707     offset/right/head/even/.alias*=head/right/even/offset,%
1708     offset/right/even/head/.alias*=head/right/even/offset,%
1709     offset/even/right/head/.alias*=head/right/even/offset,%
1710     offset/even/head/right/.alias*=head/right/even/offset,%
1711 head/right/odd/offset/.store in skip cs=f@ncy0@orh,%
1712     head/right/odd/offset/.append code=\fancy@setoffs,%
1713     head/odd/offset/right/.alias*=head/right/odd/offset,%
1714     head/odd/right/offset/.alias*=head/right/odd/offset,%
1715     head/offset/odd/right/.alias*=head/right/odd/offset,%
1716     head/offset/right/odd/.alias*=head/right/odd/offset,%
1717     head/right/offset/odd/.alias*=head/right/odd/offset,%
1718     right/head/offset/odd/.alias*=head/right/odd/offset,%
1719     right/head/odd/offset/.alias*=head/right/odd/offset,%
1720     right/offset/head/odd/.alias*=head/right/odd/offset,%
1721     right/offset/odd/head/.alias*=head/right/odd/offset,%
1722     right/odd/offset/head/.alias*=head/right/odd/offset,%
1723     right/odd/head/offset/.alias*=head/right/odd/offset,%
1724     odd/head/offset/right/.alias*=head/right/odd/offset,%
1725     odd/head/right/offset/.alias*=head/right/odd/offset,%
1726     odd/offset/head/right/.alias*=head/right/odd/offset,%

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1727     odd/offset/right/head/.alias*=head/right/odd/offset,%
1728     odd/right/offset/head/.alias*=head/right/odd/offset,%
1729     odd/right/head/offset/.alias*=head/right/odd/offset,%
1730     offset/head/right/odd/.alias*=head/right/odd/offset,%
1731     offset/head/odd/right/.alias*=head/right/odd/offset,%
1732     offset/right/head/odd/.alias*=head/right/odd/offset,%
1733     offset/right/odd/head/.alias*=head/right/odd/offset,%
1734     offset/odd/right/head/.alias*=head/right/odd/offset,%
1735     offset/odd/head/right/.alias*=head/right/odd/offset,%
1736 foot/left/even/offset/.store in skip cs=f@ncy0@elf,%
1737     foot/left/even/offset/.append code=\fancy@setoffs,%
1738     foot/even/offset/left/.alias*=foot/left/even/offset,%
1739     foot/even/left/offset/.alias*=foot/left/even/offset,%
1740     foot/offset/even/left/.alias*=foot/left/even/offset,%
1741     foot/offset/left/even/.alias*=foot/left/even/offset,%
1742     foot/left/offset/even/.alias*=foot/left/even/offset,%
1743     left/foot/offset/even/.alias*=foot/left/even/offset,%
1744     left/foot/even/offset/.alias*=foot/left/even/offset,%
1745     left/offset/foot/even/.alias*=foot/left/even/offset,%
1746     left/offset/even/foot/.alias*=foot/left/even/offset,%
1747     left/even/offset/foot/.alias*=foot/left/even/offset,%
1748     left/even/foot/offset/.alias*=foot/left/even/offset,%
1749     even/foot/offset/left/.alias*=foot/left/even/offset,%
1750     even/foot/left/offset/.alias*=foot/left/even/offset,%
1751     even/offset/foot/left/.alias*=foot/left/even/offset,%
1752     even/offset/left/foot/.alias*=foot/left/even/offset,%
1753     even/left/offset/foot/.alias*=foot/left/even/offset,%
1754     even/left/foot/offset/.alias*=foot/left/even/offset,%
1755     offset/foot/left/even/.alias*=foot/left/even/offset,%
1756     offset/foot/even/left/.alias*=foot/left/even/offset,%
1757     offset/left/foot/even/.alias*=foot/left/even/offset,%
1758     offset/left/even/foot/.alias*=foot/left/even/offset,%
1759     offset/even/left/foot/.alias*=foot/left/even/offset,%
1760     offset/even/foot/left/.alias*=foot/left/even/offset,%
1761 foot/left/odd/offset/.store in skip cs=f@ncy0@olf,%
1762     foot/left/odd/offset/.append code=\fancy@setoffs,%
1763     foot/odd/offset/left/.alias*=foot/left/odd/offset,%
1764     foot/odd/left/offset/.alias*=foot/left/odd/offset,%
1765     foot/offset/odd/left/.alias*=foot/left/odd/offset,%
1766     foot/offset/left/odd/.alias*=foot/left/odd/offset,%
1767     foot/left/offset/odd/.alias*=foot/left/odd/offset,%
1768     left/foot/offset/odd/.alias*=foot/left/odd/offset,%
1769     left/foot/odd/offset/.alias*=foot/left/odd/offset,%
1770     left/offset/foot/odd/.alias*=foot/left/odd/offset,%
1771     left/offset/odd/foot/.alias*=foot/left/odd/offset,%
1772     left/odd/offset/foot/.alias*=foot/left/odd/offset,%
1773     left/odd/foot/offset/.alias*=foot/left/odd/offset,%
1774     odd/foot/offset/left/.alias*=foot/left/odd/offset,%
1775     odd/foot/left/offset/.alias*=foot/left/odd/offset,%
1776     odd/offset/foot/left/.alias*=foot/left/odd/offset,%
1777     odd/offset/left/foot/.alias*=foot/left/odd/offset,%
1778     odd/left/offset/foot/.alias*=foot/left/odd/offset,%
1779     odd/left/foot/offset/.alias*=foot/left/odd/offset,%
1780     offset/foot/left/odd/.alias*=foot/left/odd/offset,%
1781     offset/foot/odd/left/.alias*=foot/left/odd/offset,%
1782     offset/left/foot/odd/.alias*=foot/left/odd/offset,%
1783     offset/left/odd/foot/.alias*=foot/left/odd/offset,%
1784     offset/odd/left/foot/.alias*=foot/left/odd/offset,%
1785     offset/odd/foot/left/.alias*=foot/left/odd/offset,%
1786 foot/right/even/offset/.store in skip cs=f@ncy0@erf,%
1787     foot/right/even/offset/.append code=\fancy@setoffs,%
1788     foot/even/offset/right/.alias*=foot/right/even/offset,%
1789     foot/even/right/offset/.alias*=foot/right/even/offset,%
1790     foot/offset/even/right/.alias*=foot/right/even/offset,%
1791     foot/offset/right/even/.alias*=foot/right/even/offset,%
```

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1792     foot/right/offset/even/.alias*=foot/right/even/offset,%
1793     right/foot/offset/even/.alias*=foot/right/even/offset,%
1794     right/foot/even/offset/.alias*=foot/right/even/offset,%
1795     right/offset/foot/even/.alias*=foot/right/even/offset,%
1796     right/offset/even/foot/.alias*=foot/right/even/offset,%
1797     right/even/offset/foot/.alias*=foot/right/even/offset,%
1798     right/even/foot/offset/.alias*=foot/right/even/offset,%
1799     even/foot/offset/right/.alias*=foot/right/even/offset,%
1800     even/foot/right/offset/.alias*=foot/right/even/offset,%
1801     even/offset/foot/right/.alias*=foot/right/even/offset,%
1802     even/offset/right/foot/.alias*=foot/right/even/offset,%
1803     even/right/offset/foot/.alias*=foot/right/even/offset,%
1804     even/right/foot/offset/.alias*=foot/right/even/offset,%
1805     offset/foot/right/even/.alias*=foot/right/even/offset,%
1806     offset/foot/even/right/.alias*=foot/right/even/offset,%
1807     offset/right/foot/even/.alias*=foot/right/even/offset,%
1808     offset/right/even/foot/.alias*=foot/right/even/offset,%
1809     offset/even/right/foot/.alias*=foot/right/even/offset,%
1810     offset/even/foot/right/.alias*=foot/right/even/offset,%
1811     foot/right/odd/offset/.store in skip cs=f@ncy0@orf,%
1812         foot/right/odd/offset/.append code=\fancy@setoffs,%
1813         foot/odd/offset/right/.alias*=foot/right/odd/offset,%
1814         foot/odd/right/offset/.alias*=foot/right/odd/offset,%
1815         foot/offset/odd/right/.alias*=foot/right/odd/offset,%
1816         foot/offset/right/odd/.alias*=foot/right/odd/offset,%
1817         foot/right/offset/odd/.alias*=foot/right/odd/offset,%
1818         right/foot/offset/odd/.alias*=foot/right/odd/offset,%
1819         right/foot/odd/offset/.alias*=foot/right/odd/offset,%
1820         right/offset/foot/odd/.alias*=foot/right/odd/offset,%
1821         right/offset/odd/foot/.alias*=foot/right/odd/offset,%
1822         right/odd/offset/foot/.alias*=foot/right/odd/offset,%
1823         right/odd/foot/offset/.alias*=foot/right/odd/offset,%
1824         odd/foot/offset/right/.alias*=foot/right/odd/offset,%
1825         odd/foot/right/offset/.alias*=foot/right/odd/offset,%
1826         odd/offset/foot/right/.alias*=foot/right/odd/offset,%
1827         odd/offset/right/foot/.alias*=foot/right/odd/offset,%
1828         odd/right/offset/foot/.alias*=foot/right/odd/offset,%
1829         odd/right/foot/offset/.alias*=foot/right/odd/offset,%
1830         offset/foot/right/odd/.alias*=foot/right/odd/offset,%
1831         offset/foot/odd/right/.alias*=foot/right/odd/offset,%
1832         offset/right/foot/odd/.alias*=foot/right/odd/offset,%
1833         offset/right/odd/foot/.alias*=foot/right/odd/offset,%
1834         offset/odd/right/foot/.alias*=foot/right/odd/offset,%
1835         offset/odd/foot/right/.alias*=foot/right/odd/offset,%
1836     head/inner/offset/.style={head/right/even/offset={#1},head/left/odd/offset={#1}},%
1837     head/inner/offset+/.style={head/right/even/offset+={#1},head/left/odd/offset+={#1}},%
1838     head/inner/offset-/.style={head/right/even/offset-={#1},head/left/odd/offset-={#1}},%
1839     head/inner/offset*/.style={head/right/even/offset*={#1},head/left/odd/offset*={#1}},%
1840         head/offset/inner/.alias*=head/inner/offset,%
1841         offset/head/inner/.alias*=head/inner/offset,%
1842         offset/inner/head/.alias*=head/inner/offset,%
1843         inner/head/offset/.alias*=head/inner/offset,%
1844         inner/offset/head/.alias*=head/inner/offset,%
1845     head/outer/offset/.style={head/left/even/offset={#1},head/right/odd/offset={#1}},%
1846     head/outer/offset+/.style={head/left/even/offset+={#1},head/right/odd/offset+={#1}},%
1847     head/outer/offset-/.style={head/left/even/offset-={#1},head/right/odd/offset-={#1}},%
1848     head/outer/offset*/.style={head/left/even/offset*={#1},head/right/odd/offset*={#1}},%
1849         head/offset/outer/.alias*=head/outer/offset,%
1850         offset/head/outer/.alias*=head/outer/offset,%
1851         offset/outer/head/.alias*=head/outer/offset,%
1852         outer/head/offset/.alias*=head/outer/offset,%
1853         outer/offset/head/.alias*=head/outer/offset,%
1854     foot/inner/offset/.style={foot/right/even/offset={#1},foot/left/odd/offset={#1}},%
1855     foot/inner/offset+/.style={foot/right/even/offset+={#1},foot/left/odd/offset+={#1}},%
1856     foot/inner/offset-/.style={foot/right/even/offset-={#1},foot/left/odd/offset-={#1}},%

```

```

1857   foot/inner/offset*/.style={foot/right/even/offset*={#1},foot/left/odd/offset*={#1}},%
1858     foot/offset/inner/.alias*=foot/inner/offset,%
1859     offset/foot/inner/.alias*=foot/inner/offset,%
1860     offset/inner/foot/.alias*=foot/inner/offset,%
1861     inner/foot/offset/.alias*=foot/inner/offset,%
1862     inner/offset/foot/.alias*=foot/inner/offset,%
1863   foot/outer/offset/.style={foot/left/even/offset={#1},foot/right/odd/offset={#1}},%
1864   foot/outer/offset+/.style={foot/left/even/offset+={#1},foot/right/odd/offset+={#1}},%
1865   foot/outer/offset-/.style={foot/left/even/offset-={#1},foot/right/odd/offset-={#1}},%
1866   foot/outer/offset*/.style={foot/left/even/offset*={#1},foot/right/odd/offset*={#1}},%
1867     foot/offset/outer/.alias*=foot/outer/offset,%
1868     offset/foot/outer/.alias*=foot/outer/offset,%
1869     offset/outer/foot/.alias*=foot/outer/offset,%
1870     outer/foot/offset/.alias*=foot/outer/offset,%
1871     outer/offset/foot/.alias*=foot/outer/offset,%
1872   inner/offset*/.style={foot/inner/offset={#1},head/inner/offset={#1}},%
1873   inner/offset+/.style={foot/inner/offset+={#1},head/inner/offset+={#1}},%
1874   inner/offset-/.style={foot/inner/offset-={#1},head/inner/offset-={#1}},%
1875   inner/offset*/.style={foot/inner/offset*={#1},head/inner/offset*={#1}},%
1876     offset/inner/.alias*=inner/offset,%
1877   outer/offset*/.style={foot/outer/offset={#1},head/outer/offset={#1}},%
1878   outer/offset+/.style={foot/outer/offset+={#1},head/outer/offset+={#1}},%
1879   outer/offset-/.style={foot/outer/offset-={#1},head/outer/offset-={#1}},%
1880   outer/offset*/.style={foot/outer/offset*={#1},head/outer/offset*={#1}},%
1881     offset/outer/.alias*=outer/offset,%
1882   reset/.style={norule,head=,foot=,offset=\z@,foot/rule/skip,rule/font=,font=},%
1883     reset/.value forbidden,%
1884 }% keys for \pagesetup (stored into token \itf@tk)
1885 \AtBeginDocument{%
1886 \ifdim\headwidth<\z@
1887 %% This catches the case that \headwidth hasn't been initialized and the
1888 %% case that the user added something to \headwidth in the expectation that
1889 %% it was initialized to \textwidth. We compensate this now. This loses if
1890 %% the user intended to multiply it by a factor. But that case is more
1891 %% likely done by saying something like \headwidth=1.2\textwidth.
1892 %% The doc says you have to change \headwidth after the first call to
1893 %% \pagestyle{fancy}. This code is just to catch the most common cases were
1894 %% that requirement is violated.
1895   \global\advance\headwidth123456789sp\global\advance\headwidth\textwidth
1896 \fi}
1897 

```

## 21.10 marks

```

1898 {*marks}
1899 \ProvidesPackage{interfaces-marks}
1900   [2010/11/26 v2.4 easier use of e-TeX marks (FC)]
1901 \RequirePackage{interfaces-base}

```

\marksthe

```

1902 \newrobustcmd{\marksthe}[2]{%
1903   \ifcsname marks@\#1\endcsname \else \itf@marks@new{\#1}\fi
1904   {\toks@\#2\expandafter\marks\csname marks@\#1\endcsname{\the\toks@}}%
1905 }% \marksthe

```

\marksthecs

```

1906 \newrobustcmd*\marksthecs[2]{%
1907   \ifcsname marks@\#1\endcsname \else \itf@marks@new{\#1}\fi
1908   \ifcsundef{\#2}%
1909     {}%
1910     {{\toks@\expandafter\expandafter\expandafter{\%
1911       \csname #2\endcsname}%
1912       \expandafter\marks\csname marks@\#1\endcsname{\the\toks@}}}}%

```

```
1913 }% \marksthecs
```

```
\itf@marks@new
```

```
1914 \def\itf@marks@new#1{%
1915   \expandafter\newmarks\csname marks##1\endcsname
1916   \PackageInfo{interfaces-marks}{New marks '#1' defined}%
1917 }% \itf@marks@new
```

`\thefirstmarks` Purely expandable in exactly one step of expansion.

```
\thebotmarks
\thetopmarks
```

```
1918 \newcommand*\thefirstmarks[1]{\romannumeral
1919   \ifcsname marks##1\endcsname \expandafter\z@
1920     \firstmarks\csname marks##1\expandafter\endcsname
1921   \else \expandafter\z@
1922   \fi
1923 }% \thefirstmarks
1924 \newcommand*\thebotmarks[1]{\romannumeral
1925   \ifcsname marks##1\endcsname \expandafter\z@
1926     \botmarks\csname marks##1\expandafter\endcsname
1927   \else \expandafter\z@
1928   \fi
1929 }% \thebotmarks
1930 \newcommand*\thetopmarks[1]{\romannumeral
1931   \ifcsname marks##1\endcsname \expandafter\z@
1932     \topmarks\csname marks##1\expandafter\endcsname
1933   \else \expandafter\z@
1934   \fi
1935 }% \thetopmarks
```

```
\getthemarks \getthemarks\firstmarks{{named-mark}}\result
```

```
1936 %% \getthemarks\firstmarks{section}\macro
1937 \newrobustcmd*\getthemarks[3]{%
1938   \ifcsname marks##2\endcsname
1939     \edef#3{\unexpanded\expandafter{\#1\csname marks##2\endcsname}}%
1940   \else \let#3\undefined
1941   \fi
1942 }% \getthemarks
```

`\getthefirstmarks` `\getthefirstmarks{{named-mark}}\result`: shortcut for `\getthemarks\firstmarks`

```
\getthebotmarks
\getthetopmarks
```

```
1943 \newrobustcmd*\getthefirstmarks{\getthemarks\firstmarks}
1944 \newrobustcmd*\getthebotmarks{\getthemarks\botmarks}
1945 \newrobustcmd*\getthetopmarks{\getthemarks\topmarks}
```

```
\ifmarksequal
```

```
1946 %% \ifmarksequal\firstmarks\botmarks{subsection}{ true }{ false }
1947 \newrobustcmd*\ifmarksequal[3]{%
1948   \begin{group}
1949     \getthemarks##1##3\x
1950     \getthemarks##2##3\y
1951   \expandafter\endgroup
1952   \csname ltx@\ifdefined\x\ifdefined\y
1953     \ifx\x\y first\else
1954       second\fi\else second\fi\else second\fi
1955     oftwo\endcsname
1956 }% \ifmarksequal
```

1957

**21.11 † Interface `\tocloft`: \tocsetup, \lofsetup and \lotsetup**

```

1958 /*tocloft*/
1959 \ProvidesPackage{interfaces-tocloft}
1960   [2010/11/26 v2.4 pgfkeys macros for tocloft (FC)]
1961 \RequirePackage{interfaces-base}
1962 \itf@Check@Package{tocloft}
1963 \itf@pgfkeys

```

\tocsetup      The user commands.

```

\lofsetup
\lotsetup
\listofsetup
1964 \newrobustcmd\tocsetup[1]{%
1965   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/toc}{#1}}%
1966 }% \tocsetup
1967 \newrobustcmd\lofsetup[1]{%
1968   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/lof}{#1}}%
1969 }% \lofsetup
1970 \newrobustcmd\lotsetup[1]{%
1971   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/lot}{#1}}%
1972 }% \lotsetup
1973 \newrobustcmd\listofsetup[2]{%
1974   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/#1}{#2}}%
1975 }% \listofsetup

```

\itf@cft@newlistof This macro creates the keys for `toc`, `lof` and `lot`, and is able to create the keys for each new list created with `tocloft`'s `\newlistof`.

```

1976 \def\itf@cft@newlistof#1{%
1977   \pgfqkeys{/itf/tocloft/#1}{%
1978     pagestyle/.code=\tocloftpagestyle{##1},%
1979     parskip/.store in skip cs=cftparskip,%
1980     parsep/.alias=parskip,%
1981     mark/.store in cs=cftmark#1,%
1982     marks/.alias=mark,%
1983     label/.store as code,%
1984     ref/.store as code,%
1985     ref/.initial=\csname cft#1title\endcsname,% overwritten (toc,lof,lot)
1986     ref/.default=\csname cft#1title\endcsname,% overwritten (toc,lof,lot)
1987     ref/.blank=\pgfkeysnovalue,%
1988     title/.store as code in cs=cft#1title,% overwritten below for toc, lof and lot
1989     title/top/.store in skip cs=cftbefore#1titleskip,%
1990     beforetitleskip/.alias*=title/top,%
1991     title/bottom/.store in skip cs=cftafter#1titleskip,%
1992     aftertitleskip/.alias*=title/bottom,%
1993     title/font/.store as code in cs=cft#1titlefont,%
1994     title/format/.alias*=title/font,%
1995     title/after/.store as code in cs=cftafter#1title,%
1996     title/command/.code=\csdef{@cftmake#1title}####1{##1},%
1997     dotsep/.code=\itf@units@mu\itf@musk{##1}% converts to mu
1998       \edef\cftdotsep{\itf@strip@mu\itf@musk},%
1999     dotsep/.default=4.5mu,%
2000     dotsep/.blank=\cftnodots,%
2001     dot/.store in=\cftdot,%
2002     before/.store as code,%
2003     after/.store as code,%
2004     columns/before@hook/.is private=interfaces-tocloft,%
2005     columns/after@hook/.is private=interfaces-tocloft,%
2006     columns/before@hook/.initial=,%
2007     columns/after@hook/.initial=,%
2008     columns/.code={\ltx@ifpackageloaded{multicol}{%
2009       \pgfkeysEsetvalue\pgfkeyscurrentkey{\number##1}%
2010       \ifnum\number##1>\@ne

```

```

2011           \pgfkeysgetvalue{/itf/tocloft/#1/columns/before@hook}\itf@tp
2012           \ifx\itf@tp\empty
2013               \pgfkeyssetvalue{/itf/tocloft/#1/columns/before@hook}{%
2014                   \begingroup
2015                       \multicols\pgfkeysvalueof{/itf/tocloft/#1/multicols}\relax
2016                       \begin{multicols}{\pgfkeysvalueof{/itf/tocloft/#1/columns}}%
2017                           \columnseprule\pgfkeysvalueof{/itf/tocloft/#1/columns/rule}\relax
2018                           \columnsep\pgfkeysvalueof{/itf/tocloft/#1/columns/sep}\relax
2019                           \pgfkeysgetvalue{/itf/tocloft/#1/columns/rule/color}\columnseprulecolor
2020                           \pgfkeysvalueof{/itf/tocloft/#1/multicols/begin}%
2021                   }%
2022               \pgfkeyssetvalue{/itf/tocloft/#1/columns/after@hook}{%
2023                   \pgfkeysvalueof{/itf/tocloft/#1/multicols/end}%
2024                   \end{multicols}
2025                   \endgroup
2026               }%
2027           \fi
2028       \else
2029           \pgfkeyslet\pgfkeyscurrentkey\@ne
2030           \pgfkeyslet{/itf/tocloft/#1/columns/before@hook}\@empty
2031           \pgfkeyslet{/itf/tocloft/#1/columns/after@hook}\@empty
2032       \fi}
2033       {\PackageError{interfaces-tocloft}
2034         {Key ‘columns’: package multicol is required}\@eha}%
2035   },%
2036   columns/.default=2,columns/.blank=1,%
2037     multicols/.alias=columns,%
2038     multicols/.alias=columns,%
2039   twocolumns/.true=\pgfkeysalso{columns=2},%
2040   twocolumns/.false=\pgfkeysalso{columns=1},%
2041   columns/rule/.store as dimen,%
2042   columns/rule/.default=\columnseprule,%
2043   columns/rule,% assign default
2044     columnseprule/.alias*=columns/rule,%
2045     columns/rule/width/.alias*=columns/rule,%
2046   columns/sep/.store as dimen,%
2047   columns/sep/.default=\columnsep,%
2048   columns/sep/.blank=10\p@,%
2049   columns/sep,% assign default
2050     columnsep/.alias*=columns/sep,%
2051   columns/rule/color/.store as color command,%
2052   columns/rule/color,% assign default (\normalcolor)
2053     columnseprulecolor/.alias*=columns/rule/color,%
2054     columns/rulecolor/.alias*=columns/rule/color,%
2055   multicols/.store as glue,%
2056     multicols/.default=0pt plus4pt minus3pt,%
2057     multicols,% sets default
2058   multicols/begin/.initial=,multicols/begin/.default=,%
2059     multicols/before/.alias=multicols/begin,%
2060   multicols/end/.initial=,multicols/end/.default=,%
2061     multicols/after/.alias=multicols/end,%
2062 }% \pgfkeys
2063 \itf@AfterPackage{interfaces-bookmark}{%
2064 \pgfqkeys{/itf/tocloft/#1}{%
2065     bookmark/.is multiple choice,%
2066     bookmark:bold/.true=\pgfkeysaddvalue{/itf/tocloft/#1/bookmark}{}{,bold=true},%
2067     bookmark:bold/.false=\pgfkeysaddvalue{/itf/tocloft/#1/bookmark}{}{,bold=false},%
2068     bookmark/italic/.true=\pgfkeysaddvalue{/itf/tocloft/#1/bookmark}{}{,italic=true},%
2069     bookmark/italic/.false=\pgfkeysaddvalue{/itf/tocloft/#1/bookmark}{}{,italic=false},%
2070     bookmark/color/.code=\pgfkeysaddvalue{/itf/tocloft/#1/bookmark}{}{,color={##1}},%
2071     bookmark/level/.code=\pgfkeysEaddvalue{/itf/tocloft/#1/bookmark}{}{level=%
2072         \ifcsname toclevel@\#\#\@1\endcsname
2073             \csname toclevel@\#\#\@1\endcsname
2074         \else##1\fi}}},%
2075     bookmark/text/.store as code,%

```

```

2076     bookmark/text/.default=\contentsname,%
2077     bookmark/.unknown/.code=\pgfkeysEaddvalue{/itf/tocloft/#1/bookmark}%
2078                                         {}{\pgfkeyscurrentname={##1}},%
2079     bookmark/.initial=,%
2080 }% \pgfkeys
2081 }% AfterPackage interfaces-bookmark
2082 %% while making a format \jobname is expanded to the name of the format...
2083 %% Therefore, the following commands must be expanded \AtEndPreamble
2084 \AtEndPreamble{%
2085     \BeforeFile{\jobname.#1}{%
2086         \pgfkeysvalueof{/itf/tocloft/#1/before}%
2087         \pgfkeysvalueof{/itf/tocloft/#1/columns/before@hook}%
2088     }%
2089     \AfterFile{\jobname.#1}{%
2090         \pgfkeysvalueof{/itf/tocloft/#1/columns/after@hook}%
2091         \pgfkeysvalueof{/itf/tocloft/#1/after}%
2092     }%
2093 }%
2094 \ifcsname #1setup\endcsname\else
2095     \pgfqkeys{/itf/tocloft/#1}{%
2096         pagenumbers/.true=@cftpnumon{#1},%
2097         pagenumbers/.false=@cftpnumoff{#1},%
2098         pagenumber/.alias=pagenumbers
2099     }%
2100     \expandafter\pretocmd\csname@cftmake#1title\expandafter\endcsname
2101         \expandafter{\expandafter\itf@tocloft\csname cft#1title\endcsname{#1}{listof#1}}
2102     {\PackageInfo{interfaces-tocloft}
2103         {Command \expandafter\string\csname@cftmake#1title\endcsname
2104             successfully augmented}}
2105     {\PackageWarning{interfaces-tocloft}
2106         {Command \expandafter\string\csname@cftmake#1title\endcsname
2107             \space could not be patched
2108             \MessageBreak Keys label and bookmark won't work for \string\listofsetup}}%
2109 }%
2110 }% \itf@cft@newlistof

```

Then create the keys for toc, lof, and lot:

```

2111 \itf@cft@newlistof{toc}
2112 \itf@cft@newlistof{lof}
2113 \itf@cft@newlistof{lot}

2114 %% Specific to toc only -----
2115 \pgfqkeys{/itf/tocloft/toc}{%
2116     depth/.store in counter cs=c@tocdepth,%
2117     depth/.append code=
2118         \global\c@tocdepth\c@tocdepth
2119         \addtocontents{toc}{\c@tocdepth\the\c@tocdepth\relax},%
2120     tocdepth/.alias=depth,%
2121     title/.store as code in cs=contentsname,%
2122     contentsname/.alias=title,%
2123     ref/.initial=\contentsname,%
2124     ref/.default=\contentsname,%
2125     pagenumbers/.style={% boolean key
2126         part/pagenumbers={#1}, chapter/pagenumbers={#1}, section/pagenumbers={#1},%
2127         subsubsection/pagenumbers={#1}, subsection/pagenumbers={#1},%
2128         paragraph/pagenumbers={#1}, subparagraph/pagenumbers={#1},%
2129         pagenumber/.alias=pagenumbers,%
2130     }%
2131 %% Specific to lof and lot -----
2132 \pgfqkeys{/itf/tocloft/lof}{%
2133     title/.store as code in cs=listfigurename,%
2134     listfigurename/.alias=title,%
2135     ref/.initial=\listfigurename,%
2136     ref/.default=\listfigurename,%

```

```

2137 }%
2138 \pgfqkeys{/itf/tocloft/lot}{%
2139   title/.store as code in cs=listtablename,%
2140   listtablename/.alias=title,%
2141   ref/.initial=\listtablename,%
2142   ref/.default=\listtablename,%
2143 }%
2144 \if@cftsubfigopt
2145 \pgfqkeys{/itf/tocloft}{%
2146   lof/pagenumbers/.style={figure/pagenumbers={#1},subfigure/pagenumbers={#1}},%
2147   lof/pagenumber/.alias=lof/pagenumbers,%
2148   lof/depth/.store in counter cs=c@lofdepth,%
2149   lof/depth/.append code=\global\c@lofdepth\c@lofdepth
2150           \addtocontents{lof}{\c@lofdepth\the\c@lofdepth\relax},%
2151   lot/pagenumbers/.style={figure/pagenumbers={#1},subfigure/pagenumbers={#1}},%
2152   lot/pagenumber/.alias=lot/pagenumbers,%
2153   lot/depth/.store in counter cs=c@lotdepth,%
2154   lot/depth/.append code=\global\c@lotdepth\c@lotdepth
2155           \addtocontents{lot}{\c@lotdepth\the\c@lotdepth\relax},%
2156 }%
2157 \else
2158 \pgfqkeys{/itf/tocloft}{%
2159   lof/pagenumbers/.style={figure/pagenumbers={#1}},%
2160   lof/pagenumber/.alias=lof/pagenumbers,%
2161   lot/pagenumbers/.style={figure/pagenumbers={#1}},%
2162   lot/pagenumber/.alias=lot/pagenumbers,%
2163 }%
2164 \fi

```

\itf@cft@sectionname This macro converts subsection into subsec *etc.* because of tocloft command names:  
\cftbeforesubsecskip, \cftsubsecindent *etc.*

And the keys are either **subsec** or **subsection**.

```

2165 \def\itf@cft@name#1.#2.#3@nil{\cft#1\itf@cft@secname{#2}#3}
2166 \def\itf@cft@secname#1{%
2167   \expandafter\itf@cft@sec@name\csname#1\endcsname{#1}%
2168 }% \itf@cft@secname
2169 \def\itf@cft@sec@name#1#2{%
2170   \ifx#1\chapter chap\else
2171     \ifx#1\section sec\else
2172       \ifx#1\subsection subsec\else
2173         \ifx#1\subsubsection subsubsec\else
2174           \ifx#1\paragraph para\else
2175             \ifx#1\subparagraph subpara\else
2176               \ifx#1\figure fig\else
2177                 \ifx#1\subfigure subfig\else
2178                   \ifx#1\table tab\else
2179                     \ifx#1\subtable subtab\else
2180                       #2\fi
2181                     \fi\fi\fi\fi\fi\fi
2182 }% \itf@cft@secname

```

2183 %% tocloft setup for tables sections :

```

2184 \pgfkeys{%
2185 /handlers/.cft@def/.style={\pgfkeyscurrentpath/.store in cs=\itf@cft@name #1@nil},%
2186 /handlers/.cft@code/.style={\pgfkeyscurrentpath/.store as code in cs=\itf@cft@name #1@nil},%
2187 /handlers/.cft@length/.style={\pgfkeyscurrentpath/.store in skip cs=\itf@cft@name #1@nil},%
2188 }

```

\itf@cft@newsection This macro creates the keys for each sectionning command.

```

2189 \def\itf@cft@newsection{\itf@cft@new@section{/itf/tocloft}}
2190 \def\itf@cft@new@section#1#2#3{#2=part / chap / sec / subsec etc., #3 = toc | lof | lot

```

```

2191  \pgfqkeys{#1/#3/#2}{%
2192    skip/.cft@length=before.#2.skip,%  

2193    beforeskip/.alias*=skip,%  

2194    top/.alias*=skip,%  

2195    indent/.cft@length=.#2.indent,%  

2196    font/.cft@code=.#2.font,%  

2197    font/.append code={\pgfkeysalso{/itf/tocloft/#3/#2/pagenumber/font={##1}}},%  

2198    format/.alias*=font,%  

2199    number/width/.cft@length=.#2.numwidth,%  

2200    numwidth/.alias*=number/width,%  

2201    presnum/.cft@code=.#2.presnum,%  

2202    number/before/.alias*=presnum,%  

2203    aftersnum/.cft@code=.#2.aftersnum,%  

2204    number/after/.alias*=aftersnum,%  

2205    aftersnumb/.cft@code=.#2.aftersnumb,%  

2206    title/before/.alias*=aftersnumb,%  

2207    leader/.cft@def=.#2.leader,%  

2208    leader/.default=\cftdotfill{\csname\itf@cft@name.#2.dotsep@nil\endcsname},%  

2209    leaders/.alias=leader,%  

2210    dotsep/.code={\ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text  

2211      \csdef{\itf@cft@name.#2.dotsep@nil}{\cftdotsep}%  

2212    \else  

2213      \itf@units@mu\itf@musk{##1}%  

2214      \csedef{\itf@cft@name.#2.dotsep@nil}{\itf@strip@mu\itf@musk} %  

2215    \fi},%  

2216    dotsep/.blank=\cftnodots,%  

2217    nodots/.code=\csdef{\itf@cft@name.#2.dotsep@nil}{\cftnodots},%  

2218    nodots/.value forbidden,%  

2219    pagefont/.cft@code=.#2.pagefont,%  

2220    page/font/.alias*=pagefont,%  

2221    pagenumber/font/.alias*=pagefont,%  

2222    afterpnum/.cft@code=.#2.afterpnum,%  

2223    page/after/.alias*=afterpnum,%  

2224    pagenumber/after/.alias*=afterpnum,%  

2225    pagenumbers/.on=@cftpnumon{\itf@cft@secname{#2}},%  

2226    pagenumbers/.off=@cftpnumoff{\itf@cft@secname{#2}},%  

2227    pagenumber/.alias=pagenumbers,%  

2228  }% \pgfqkeys  

2229 }% \itf@cft@new@section

2230 \@for\itf@tp:=part, chap, chapter, sec, section, subsec, subsection,%  

2231   subsubsec, subsubsection, para, paragraph, subparagraph%  

2232   \do{\expandafter\itf@cft@newsection\expandafter{\itf@tp}{toc}}%  

2233 \if@cftsubfigopt  

2234   \@for\itf@tp:=fig, figure, subfig, subfigure%  

2235     \do{\expandafter\itf@cft@newsection\expandafter{\itf@tp}{lof}}%  

2236   \@for\itf@tp:=tab, table, subtab, subtable%  

2237     \do{\expandafter\itf@cft@newsection\expandafter{\itf@tp}{lot}}%  

2238 \else  

2239   \@for\itf@tp:=fig, figure%  

2240     \do{\expandafter\itf@cft@newsection\expandafter{\itf@tp}{lof}}%  

2241   \@for\itf@tp:=tab, table%  

2242     \do{\expandafter\itf@cft@newsection\expandafter{\itf@tp}{lot}}%  

2243 \fi

@cftmaketoctitle (patch)  

@cftmakeloftitle (patch)  

@cftmakelottitle (patch)  

newlistentry (patch)
2244 \itf@patch\pretocmd@cftmaketoctitle
2245 {\itf@tocloft\contentsname{toc}{tableofcontents}}
2246 {\PackageInfo{interfaces-tocloft}
2247 {Command \string@\cftmaketoctitle\space successfully augmented}}
2248 {\PackageWarning{interfaces-tocloft}
2249 {Command \string@\cftmaketoctitle\space could not be patched
2250 \MessageBreak label and bookmark keys for \string\tocsetup\space won't work}}%
```

```

2251 \itf@patch\pretocmd@\cftmakeloftitle
2252   {\itf@tocloft\listfigurename{lof}{listoffigures}}
2253   {\PackageInfo{interfaces-tocloft}
2254     {Command \string@\cftmakeloftitle\space successfully augmented}}
2255   {\PackageWarning{interfaces-tocloft}
2256     {Command \string@\cftmakeloftitle\space could not be patched
2257       \MessageBreak label and bookmark keys for \string\lofsetup\space won't work}}%
2258 \itf@patch\pretocmd@\cftmakelottitle
2259   {\itf@tocloft\listtablename{lot}{listoftables}}
2260   {\PackageInfo{interfaces-tocloft}
2261     {Command \string@\cftmakelottitle\space successfully augmented}}
2262   {\PackageWarning{interfaces-tocloft}
2263     {Command \string@\cftmakelottitle\space could not be patched
2264       \MessageBreak label and bookmark keys for \string\lotsetup\space won't work}}%
2265 \itf@patch\apptocmd\newlistentry
2266   {\itf@cft@newlistof{\#2}}
2267   {\PackageInfo{interfaces-tocloft}
2268     {Command \string\newlistentry\space successfully augmented}}
2269   {\PackageWarning{interfaces-tocloft}
2270     {Command \string\newlistentry\space could not be patched
2271       \MessageBreak \string\listofsetup\space will not work}}%

```

\itf@cft@label      \itf@cft@label insert the anchor for the table of contents and makes the label (if the key `label` of `\tocsetup`, `\lofsetup` etc. has been set to a non empty value.

```

2272 \def\itf@tocloft#1#2#3{%
2273   \expandafter\def\expandafter#1\expandafter{%
2274     \expandafter\itf@cft@label
2275       \expandafter#1\expandafter{\#1}{\#2}{\#3}}%
2276 }% \itf@tocloft
2277 \long\def\itf@cft@label#1#2#3#4{%
2278   \def#1{\#2}% restore original
2279   \begingroup
2280   \pgfkeysifdefined{/itf/tocloft/#3/bookmark}
2281   {%
2282     \raisedhyperdef{interfaces}{\#4}{\#2}%
2283     \pgfkeysgetvalue{/itf/tocloft/#3/bookmark/text}\itf@tp
2284     \ifx\itf@tp\empty\else
2285       \pgfkeysgetvalue{/itf/tocloft/#3/bookmark}@tempa
2286       \expandafter\bookmark\expandafter[%
2287         \expandafter{\@tempa,dest=interfaces.\#4}]%
2288         \pgfkeysvalueof{/itf/tocloft/#3/bookmark/text}}%
2289       \global\BKM@startatroottrue
2290     \fi
2291   }#2%
2292   \pgfkeysgetvalue{/itf/tocloft/#3/label}\itf@tp
2293   \ifx\itf@tp\empty\else
2294     \def\@currentHref{interfaces.\#4}%
2295     \pgfkeysgetvalue{/itf/tocloft/#3/ref}@currentlabel
2296     \def\@currentlabelname{\#2}%
2297     \label{\pgfkeysvalueof{/itf/tocloft/#3/label}}%
2298   \fi
2299   \endgroup
2300   \gdef\itf@tp{\def#1{\#2}\let\itf@tp\undefined}% restore original
2301   \aftergroup\itf@tp % simple group introduced by tocloft to print \contentsname
2302 }% \itf@cft@label

```

2303 </tocloft>

## 21.12 † Interface ↗ `makecell` : `\repeatcell`

```

2304 /*makecell*/
2305 \ProvidesPackage{interfaces-makecell}
2306   [2010/11/26 v2.4 repeatcell to fill in tabulars (FC)]
2307 \RequirePackage{interfaces-base}
2308 \itf@Check@Package{makecell}
2309 \edef\itf@AtEnd{\catcode126 \the\catcode126}% 126 = ~
2310 \AtEndOfPackage{\itf@AtEnd}
2311 \catcode126 \active % 126 = ~
2312 \itf@pgfkeys

```

### 21.12.1 `countvalues`

```
\countvalues
```

```

2313 \def\countvalues#1{\number\numexpr
2314   \expandafter\itf@countvalues\expandafter#1,\countvalues@nnil
2315 }% \countvalues
2316 \def\itf@countvalues#1#2,#3@nnil{%
2317   \ifx\countvalues#3%
2318     +#1\expandafter\remove@to@nnil
2319   \else
2320     +1\expandafter\itf@countvalues
2321   \fi#3@nnil
2322 }% \itf@countvalues

```

```
\itf@getvalue
```

```

2323 \def\itf@getvalue#1#2{\romannumeral-`q
2324   \expandafter\itf@getv@lue\expandafter#1,\itf@getvalue@nil{#2-1}@nnil
2325 }% \itf@getvalue
2326 \def\itf@getv@lue#1#2,#3@nil#4@nnil{%
2327   \ifnum\numexpr#1=\numexpr#4\relax
2328     #2\expandafter\remove@to@nnil
2329   \else\ifx\itf@getvalue#3%
2330     \expandafter\expandafter\expandafter\remove@to@nnil
2331   \else
2332     \expandafter\expandafter\expandafter\itf@getv@lue
2333   \fi\fi{#1+1}#3@nil#4@nnil
2334 }% \itf@getv@lue

```

### 21.12.2 `\repeatcell`

```
\repeatcell
```

```

2335 \newif\ifitf@celltranspose
2336 \newrobustcmd*\repeatcell{\begingroup \iffalse{\fi \ifnum0='}\fi \itf@repeatcell}
2337 \newrobustcmd*\itf@repeatcell[3][]{%
2338   \ifblank{#1}{% alignment option ?
2339     {\let\itf@makecell@\firstofone}
2340     {\def\itf@makecell##1{\noexpand\makecell[{#1}]{{##1}}}}%
2341   \countdef\itf@col=100% local
2342   \countdef\itf@row=101% local
2343   \countdef\itf@cnt=102% local
2344   \toksdef\itf@cell=1% local
2345   \itf@pgfkeys
2346   \pgfqkeys{/itf/makecell/repeatcell}{@reset={#2},#3}%
2347   \toks@\{\ifnum0='{\fi \iffalse}\fi \endgroup\}%
2348   \ifnum\itf@row>\z@ % number
2349     \edef\itf@rowloop{\noexpand\@whilenum\itf@row<\the\itf@row}%
2350     \def\itf@cell@init{\def\r{\row}\let\R\empty}%
2351   \else % list

```

```

2352 \def\itf@rowloop{@for\r:=\itf@rows}%
2353 \expandafter\def\expandafter\itf@cell@init\expandafter{%
2354     \expandafter\def\expandafter\R\expandafter{%
2355         \expandafter\itf@getvalue\expandafter{\expandafter{@empty\itf@rows}}}}%
2356 \fi
2357 \ifnum\itf@col>z@ % number
2358     \edef\itf@colloop{\noexpand\whilenum\itf@col<\the\itf@col}%
2359     \expandafter\def\expandafter\itf@cell@init\expandafter{%
2360         \itf@cell@init\def\c{\column}\let\C@\empty}%
2361 \else % list
2362     \def\itf@colloop{@for\c:=\itf@cols}%
2363     \expandafter\expandafter\expandafter\def
2364         \expandafter\expandafter\expandafter\expandafter\itf@cell@init
2365             \expandafter\expandafter\expandafter\expandafter{%
2366                 \expandafter\itf@cell@init
2367                 \expandafter\def\expandafter\C\expandafter{%
2368                     \expandafter\itf@getvalue\expandafter{\expandafter{@empty\itf@cols}}}}%
2369 \fi
2370 \itf@cell@init % in case they are used in formulas
2371 \ifitf@celltranspose
2372     \itf@col\z@
2373 \itf@colloop\do{%
2374     \ifnum\itf@col>z@
2375         \pgfkeysifdefined{/itf/makecell/repeatcell/cr/row\the\itf@col}%
2376             {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr/row\the\itf@col}\itf@thecr}%
2377             {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr}\itf@thecr}%
2378         \toks@\expandafter\expandafter\expandafter{%
2379             \expandafter\the\expandafter\toks@\itf@thecr}%
2380     \fi
2381     \advance\itf@col@ne
2382     \itf@row\z@
2383     \itf@rowloop\do{%
2384         \advance\itf@row@ne
2385         \ifnum\itf@row@>@ne
2386             \toks@\expandafter{\the\toks@&}%
2387         \fi
2388         \toks@\expandafter\expandafter\expandafter{%
2389             \expandafter\the\expandafter\toks@
2390             \itf@cell@init}%
2391             \itf@cell@insert}% rows loop
2392     }% cols loop
2393 \else
2394     \itf@row\z@
2395     \itf@rowloop\do{%
2396         \ifnum\itf@row>z@
2397             \pgfkeysifdefined{/itf/makecell/repeatcell/cr/row\the\itf@row}%
2398                 {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr/row\the\itf@row}\itf@thecr}%
2399                 {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr}\itf@thecr}%
2400             \toks@\expandafter\expandafter\expandafter{%
2401                 \expandafter\the\expandafter\toks@\itf@thecr}%
2402         \fi
2403         \advance\itf@row@ne
2404         \itf@col\z@
2405         \itf@colloop\do{%
2406             \advance\itf@col@ne
2407             \ifnum\itf@col@>@ne
2408                 \toks@\expandafter{\the\toks@&}%
2409             \fi
2410             \toks@\expandafter\expandafter\expandafter{%
2411                 \expandafter\the\expandafter\toks@
2412                 \itf@cell@init}%
2413                 \itf@cell@insert}% cols loop
2414     }% rows loop
2415 \fi
2416 \itf@message{Code introduced by repeatcell in the \@currenvir:^^}

```

```

2417           \the\toks@}% (to see the code...)
2418   \the\toks@ \ignorespaces
2419 }% \itf@repeatcell

\itf@message

2420 \let\itf@message@gobble

```

Now the keys for `\repeatcell`:

```

2421 \def\itf@cell@rowcolkey{%
2422   \removefromstart\pgfkeyscurrentname{row}%
2423   \ifin@\else
2424     \removefromstart\pgfkeyscurrentname{col}%
2425   \fi
2426   \ifin@
2427     \itf@number\itf@cnt\pgfkeyscurrentname\relax@nnil
2428       {\pgfkeyslet\pgfkeyscurrentkey\pgfkeyscurrentvalue}%
2429       \in@false
2430   \fi
2431   \ifin@\else
2432     \pgfkeysvalueof{/errors/unknown key/.@cmd}\pgfkeyscurrentkey
2433           \pgfkeyscurrentvalue
2434           \pgfeov
2435   \fi
2436 }% \itf@cell@rowcolkey
2437 \pgfqkeys{/itf/makecell/repeatcell}{%
2438   font/.store in=\itf@cellfont,%
2439   font/.unknown/.code=\itf@cell@rowcolkey,%
2440   text/.store in=\itf@celltext,%
2441   text/.default=\ifdefined\C\column\fi,%
2442   text/.unknown/.code=\itf@cell@rowcolkey,%
2443   cr/.initial=\\,%
2444   cr/.default=\crrcr,cr/.blank=\\,end/.alias=cr,%
2445   cr/.unknown/.code=\itf@cell@rowcolkey,%
2446   rows/.code=\itf@number\itf@row#1\relax@nnil
2447     {\ifnum\itf@row<\z@\itf@row@ne\fi}
2448     {\itf@row\z@
2449      \def\itf@rows{\#1}\itf@expandonceifcs\itf@rows},%
2450   rows/.default=1,rows/.blank=1,%
2451   @cols/.is private=interfaces-makecell,%
2452   column/.is private=interfaces-makecell,%
2453   row/.is private=interfaces-makecell,%
2454   transpose/.is if=\itf@celltranspose,%
2455   .unknown/.code=%
2456     \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text \itf@cell@formulaerror{}\z@\fi
2457     \ifx\pgfkeyscurrentvalue@\empty \itf@cell@formulaerror{}@\ne\fi
2458     \pgfkeysifdefined{\pgfkeyscurrentkey/@calc}{%
2459       \itf@cell@formulaerror{}\tw@}
2460       {\pgfkeyslet{\pgfkeyscurrentkey/@calc}\relax}%
2461     \itf@cell@getformula{\#1}%
2462     \pgfkeysEaddvalue{/itf/makecell/repeatcell/@calc}{}%
2463       {\the\toks@\expandafter\noexpand\csname\pgfkeyscurrentname\endcsname}%
2464       \expandafter\let\csname\pgfkeyscurrentname\endcsname@\undefined,%
2465   @reset/.code=% #1 are the columns
2466     \itf@celltransposefalse
2467     \let\itf@celltext\empty
2468     \let\itf@cellfont\empty
2469     \pgfkeyssetvalue{/itf/makecell/repeatcell/cr}{\\}%
2470     \itf@row\@ne
2471     \pgfkeyssetvalue{/itf/makecell/repeatcell/@calc}{%
2472       \itf@cell@numcalc\itf@col\column
2473       \itf@cell@numcalc\itf@row\row}%
2474     \itf@number\itf@col#1\relax@nnil

```

```

2475     {\ifnum\itf@col<\z@\itf@col\ne\fi}
2476     {\itf@col\z@
2477     \def\itf@cols{\#1}\itf@expandonceifcs\itf@cols},%
2478 }% keys for \repeatcell

```

`\itf@cell@getformula` Determines whether the formula should be evaluated with `\numexpr`, with `\pgfmath` or `$$\FPeval$$`:

```

2479 \def\itf@cell@getformula#1{%
2480   \itf@cell@getf@rmula #1 $$\itf@cell@getformula$\relax\@nnil
2481   \expandafter\ifx\expandafter\toks@\the\toks@
2482     \itf@cell@formulaerror{\#1}\thr@@
2483   \fi
2484 }% \itf@cell@getformula
2485 \def\itf@cell@getf@rmula #1#2#3#4#5#6{%
2486   \toks@\{\toks@}%
2487   \ifx\itf@cell@getformula #4%
2488     \toks@\{\itf@cell@numcalc{\#1}\}%
2489   \else\ifx $#4%
2490     \ifx\itf@cell@getformula #6%
2491       \ifdefined\pgfmathparse\else\itf@cell@formulaerror{\#2}4\fi
2492       \toks@\{\itf@cell@pgfcalc{\#2}\}%
2493     \else\ifx $#6%
2494       \ifdefined\FPeval\else\itf@cell@formulaerror{\#3}5\fi
2495       \toks@\{\itf@cell@FPCalc{\#3}\}%
2496     \fi\fi
2497   \fi\fi\remove@to@nnil
2498 }% \itf@cell@getf@rmula
2499 \def\itf@cell@formulaerror#1#2{%
2500   \def\itf@tp{\#1}\@onelvel@sanitize\itf@tp
2501   \ifcase#2% 0
2502     \PackageError{interfaces-makecell}{%
2503       {Missing formula for key \pgfkeyscurrentname!}\@ehd
2504     \or %1
2505     \PackageError{interfaces-makecell}{%
2506       {Computed key \pgfkeyscurrentname\space was left blank!}\@ehd
2507     \or %2
2508     \PackageError{interfaces-makecell}{%
2509       {Duplicate definition for computed key \pgfkeyscurrentname
2510       \MessageBreak\string\repeatcell\space will redefine the key}\@ehd
2511     \or %3
2512     \PackageError{interfaces-makecell}{%
2513       {Incorrect formula in \string\repeatcell
2514       \MessageBreak Check: \itf@tp
2515       \MessageBreak Take care of commas and equal signs...}\@ehd
2516     \or %4
2517     \PackageError{interfaces-makecell}{%
2518       {Formula: \itf@tp
2519       \MessageBreak requires \string\pgfmathparse:\space\string\usetikz{pgfmath}}\@ehd
2520     \or %5
2521     \PackageError{interfaces-makecell}{%
2522       {Formula: \itf@tp
2523       \MessageBreak requires \string\FPeval:\space\string\usepackage{fp}}\@ehd
2524     \else
2525     \PackageError{interfaces-makecell}{%
2526       {Impossible value!}}\@ehd
2527   \fi
2528 }% \itf@cell@formulaerror

```

```

\itf@cell@calc
\itf@cell@numcalc
\itf@cell@pgfcalc
\itf@cell@FPcalc
 2529 \protected\def\itf@cell@calc#1#2{%
 2530   \edef#1{\def\noexpand#1{#2}}%
 2531   \toks@\expandafter\expandafter\expandafter{%
 2532     \expandafter\the\expandafter\toks@#1}%
 2533   #1%
 2534 }% \itf@cell@calc
 2535 \protected\def\itf@cell@numcalc#1#2{%
 2536   \itf@cell@calc#2{\number\numexpr#1}%
 2537 }% \itf@cell@numcalc
 2538 \protected\def\itf@cell@pgfcalc#1#2{%
 2539   \pgfmathparse{#1}%
 2540   \itf@cell@calc#2\pgfmathresult
 2541 }% \itf@cell@pgfcalc
 2542 \protected\def\itf@cell@FPcalc#1#2{%
 2543   \begingroup
 2544   \setbox\z@\vbox{\%FPeval introduces some weird code, hence the calculation in a \vbox
 2545   \FPeval\FPresult{#1}%
 2546   \global\let\FPresult\FPresult}%
 2547   \endgroup
 2548   \itf@cell@calc#2\FPresult
 2549 }% \itf@cell@FPcalc

```

`\itf@cell@insert` Insert a cell (into the temporary `\toks@` token register):

```

2550 \def\itf@cell@getifdefined#1#2{%
2551   \pgfkeysifdefined{/itf/makecell/repeatcell/#1}%
2552   {\pgfkeysgetvalue{/itf/makecell/repeatcell/#1}#2}%
2553   {\let#2\empty}%
2554 }%
2555 \def\itf@cell@insert{%
2556   \pgfkeysvalueof{/itf/makecell/repeatcell/@calc}%
2557   \ifx\R\empty\else
2558     \toks@\expandafter\expandafter\expandafter{%
2559       \expandafter\the\expandafter\toks@
2560       \expandafter\def\expandafter\r\expandafter{\r}}%
2561   \fi
2562   \ifx\C\empty\else
2563     \toks@\expandafter\expandafter\expandafter{%
2564       \expandafter\the\expandafter\toks@
2565       \expandafter\def\expandafter\c\expandafter{\c}}%
2566   \fi
2567   \itf@cell@getifdefined{font/row\the\itf@row}\itf@cellfontrow
2568   \itf@cell@getifdefined{font/col\the\itf@col}\itf@cellfontcol
2569   \itf@cell@getifdefined{text/row\the\itf@row}\itf@cellrow
2570   \itf@cell@getifdefined{text/col\the\itf@col}\itf@cellcol
2571   \toks@\expandafter\expandafter\expandafter{%
2572     \expandafter\the\expandafter\toks@\itf@cellfont}%
2573   \ifx\itf@cellrow\empty
2574     \ifx\itf@cellcol\empty
2575       \itf@cell\expandafter\expandafter\expandafter{%
2576         \expandafter\itf@cellfontcol\itf@cellfontrow}%
2577       \let\itf@tp\itf@celltext
2578     \else
2579       \itf@cell\expandafter{\itf@cellfontcol}%
2580       \let\itf@tp\itf@cellcol
2581     \fi
2582   \else
2583     \ifx\itf@cellcol\empty
2584       \itf@cell\expandafter{\itf@cellfontrow}%
2585       \let\itf@tp\itf@cellrow
2586     \else
2587       \itf@cell{}%
2588     \fi
2589   \fi
2590 }
```

```

2588     \ifitf@celltranspose
2589     \edef\itf@tp{\noexpand\itf@diaghead(-2,1)
2590         {\expandonce\itf@cellfontrow\expandonce\itf@cellrow}
2591         {\expandonce\itf@cellfontcol\expandonce\itf@cellcol}}%
2592     \else
2593     \edef\itf@tp{\noexpand\itf@diaghead(-2,1)
2594         {\expandonce\itf@cellfontcol\expandonce\itf@cellcol}
2595         {\expandonce\itf@cellfontrow\expandonce\itf@cellrow}}%
2596     \fi
2597   \fi
2598 \fi
2599 \itf@cell\expandafter\expandafter\expandafter{%
2600     \expandafter\the\expandafter\itf@cell\itf@tp}%
2601 \edef\itf@tp{\itf@makecell{\the\itf@cell}}%
2602 \toks@\expandafter\expandafter\expandafter{%
2603     \expandafter\the\expandafter\toks@\itf@tp}%
2604 }% \itf@cell@insert

```

`\itf@diaghead` A helper macro to `makecell`'s `\diaghead`

```

2605 \def\itf@diaghead(#1)#2#3{%
2606   \begingroup
2607   \edef\itf@tp{%
2608     \noexpand\diaghead({#1}){\unexpanded{#2 #3}}%
2609     {\unexpanded{#2}}%
2610     {\unexpanded{#3}}}}%
2611   \expandafter\endgroup\itf@tp
2612 }% \itf@diaghead

```

### 21.12.3 colortbl: patch for `\CT@cellc`

`\CT@cellc`

```

2613 \AfterPackage*{colortbl}{%
2614 \def\CT@cellc[#1][#2]{% #1 is either \@firstofone or \@gobble, [#2]#3 = color spec
2615   \xdef\CT@cell@color{\noexpand\CT@color#1[{\#2}]}{#3}%
2616   \global\let\noexpand\CT@cell@color\relax}%
2617 }%
2618 </makecell>

```

## 21.13 † Interface ☈ enumitem : `\setlist`

```

2619 {*enumitem}
2620 \ProvidesPackage{interfaces-enumitem}
2621   [2010/11/15 v2.1 more control on lists (FC)]
2622 \RequirePackage{interfaces-base}
2623 \itf@Check@Package{enumitem}
2624 \itf@pgfkeys

```

`\interitem` Like `amstext \intertext`, `\interitem` allows to add some non indented text inside a list environment:

```

2625 \providerobustcmd*\interitem{%
2626   \item[]\hskip-\leftmargin
2627 }% \interitem

```

```

setlist (extension, star form)

2628 \renewrobustcmd*\setlist{\begingroup \@ifstar
2629   {\let\do\csgappto \itf@setlist}
2630   {\let\do\csgdef \itf@setlist}%

```

```

2631 }% \setlist
2632 \newrobustcmd*\itf@setlist[2][0]{%
2633   \let\enit@a@\empty
2634   \let\enit@b@\empty
2635   \@for\x:=#1\do{%
2636     \ifx\x@\empty\else
2637       \itf@number\count@\x\relax\@nnil
2638       {\edef\enit@b{\enit@b,\the\count@}}
2639       {\edef\enit@a{\enit@a,\x}}%
2640     \fi}%
2641   \ifx\enit@a@\empty\def\enit@a{list}\fi
2642   \ifx\enit@b@\empty\def\enit@b{0}\fi
2643   \@for\aa:=\enit@a\do{%
2644     \ifx\aa@\empty\else
2645     \@for\bb:=\enit@b\do{%
2646       \ifx\bb@\empty\else
2647         \ifcsundef{end\aa}{%
2648           {\expandafter\itf@setlist@error\expandafter{\aa}}%
2649           {\do{\enit@@\aa\romannumeral\bb}{,##2}}%
2650         \fi}%
2651       \fi}
2652   \endgroup
2653 }% \itf@setlist
2654 \def\itf@setlist@error#1{%
2655   \PackageError{interfaces-enumitem}{%
2656     {Environment ‘#1’ is undefined}%
2657     {MessageBreak Use \string\newlist\space before \string\setlist}%
2658     {MessageBreak Your command will be ignored}}\@eha
2659 }% \itf@setlist@error

2660 </enumitem>

```

## 21.14 ↗ Interface `truncate`

```

2661 <*truncate>
2662 \ProvidesPackage{interfaces-truncate}

```

\trunc{text} `\trunc` is like `\truncate` but leaves the text to its natural width if possible.

```

2663 \newrobustcmd\trunc{text}[3][\TruncateMarker]{% do nothing if width of #3 is less than #2
2664   \begingroup
2665     \hbadness\maxdimen\hfuzz\vsiz
2666     \setbox\z@=\hbox to\dimexpr#2\relax\bgroup\color@begingroup
2667       \ignorespaces#3\unskip
2668       \color@endgroup\egroup
2669     \ifnum\badness>@M \truncate[{\#1}]{\#2}{\#3}%
2670 %%       \def\next{\truncate[{\#1}]{\#2}{\#3}}%
2671     \else #3%\def\next{\#3}%
2672     \fi
2673   \endgroup
2674 }% \trunc

```

\htruncadjust

```

2675 \newrobustcmd\htruncadjust[1]{\@testopt
2676   {\itf@htruncadjust{\#1}}{}}
2677 }% \htruncadjust
2678 \long\def\itf@htruncadjust#1[#2]#3{##1=total width, #2=[x_1..x_n], #3=text_1..text_n
2679   \begingroup
2680   \let\itf@trunc@width@\empty
2681   \let\itf@istruncated@\gobble % to remove the first comma
2682   \let\the@dimen\relax
2683   \count@\z@ \dimen@\z@
2684   \ifblank{\#2}{no optional [x_1,...,x_n] parameters}

```

```

2685      {%
2686          \@for\x:=#3\do{%
2687              \advance \count@\ @ne
2688              \setbox\z@\hbox\bgroup\color@begingroup
2689                  \ignorespaces\x\unskip
2690                  \color@endgroup\egroup
2691              \dimen\count@ = \wd\z@
2692              \toks\count@\expandafter{\the\dimen\count@}%
2693              \advance\dimen@\dimen\count@}%
2694      }
2695      {%
2696          \@for\x:=#2\do{%
2697              \advance \count@\ @ne
2698              \toks\count@\expandafter{\x\p@}%
2699              \advance\dimen@\x\p@
2700              \dimen\count@ -\@ne\p@}%
2701      }
2702      \advance\count@\@ne \dimendef\itf@freespace=\count@
2703      \advance\count@\@ne \dimendef\itf@tempdim=\count@
2704      \advance\count@\@ne \dimendef\itf@sum=\count@
2705      \count@\z@
2706      \itf@freespace\z@ % free space left when w_i < x_i/sum(x_i) * total
2707      \@for\x:=#3\do{%
2708          \advance \count@\ @ne
2709          \ifdim\dimen@=\z@ \else
2710              \ifdim \dimen\count@<\z@ % not measured before
2711                  \setbox\z@\hbox\bgroup\color@begingroup
2712                      \ignorespaces\x\unskip
2713                      \color@endgroup\egroup
2714              \dimen\count@ = \wd\z@
2715          \fi
2716          \itf@tempdim = \itf@scaledimen{#1}*\the\toks\count@\dimen@\relax
2717          \ifdim \dimen\count@ > \itf@tempdim
2718              \dimen\count@ = \itf@tempdim
2719              \edef\itf@istruncated{\itf@istruncated,\the\count@}%
2720              \advance\itf@sum by\the\toks\count@
2721          \else
2722              \advance\itf@freespace \itf@tempdim
2723              \advance\itf@freespace -\dimen\count@
2724          \fi
2725      \fi
2726      \edef\itf@trunc@width{\itf@trunc@width\the\count@{\the@dimen\the\count@}}%
2727  }%
2728 %% Free space=\the\itf@freespace\par
2729 \ifdim\itf@freespace > \z@ % reinsert free space proportionally
2730     \ifx\itf@istruncated\@gobble\else
2731         \@for\x:=\itf@istruncated\do{%
2732             \advance\dimen\x by\itf@scaledimen\itf@freespace*\the\toks\x/\itf@sum\relax
2733         }%
2734     \fi\fi
2735     \def\the@dimen{\the\dimen}%
2736     \edef\itf@trunc@width{\itf@trunc@width}%
2737     \expandafter\endgroup
2738     \expandafter\def
2739         \expandafter\itf@trunc@width
2740             \expandafter{\itf@trunc@width}%
2741 %% total=\the\dimexpr#1\relax
2742 }% \itf@htruncadjust
2743 \def\itf@scalefactor#1#2{\strip@pt\dimexpr#1*65536/#2\relax}
2744 \def\itf@scaledimen#1#2#3\relax{%
2745     \dimexpr\itf@scalefactor{#2}{#3}\dimexpr#1\relax\relax
2746 }% \itf@scaledimen

```

\htruncwidth

```

2747 \newcommand*\htruncwidth[1]{% purely expandable
2748   \expandafter\itf@htruncwidth\itf@trunc@width\relax\relax@nnil{#1}%
2749 }% \htruncwidth
2750 \def\itf@htruncwidth#1#2#3@nnil#4{%
2751   \ifx\relax#1\itf@trunc@nosuchwidth{#4}%
2752   \else\ifnum#1=#4
2753     #2%
2754   \else
2755     \itf@htruncwidth#3@nnil{#4}%
2756   \fi\fi
2757 }% \itf@htruncwidth
2758 \def\itf@trunc@nosuchwidth#1{%
2759   \PackageError{interfaces-truncate}{%
2760     You requested the width for text nr#1
2761     \MessageBreak but there is no such text
2762     \MessageBreak Therefore no such width!}@\ehd
2763 }% \itf@trunc@nosuchwidth

2764 
```

## 21.15 ↗ Interface ↗ appendix and the appendices environment

```

2765 {*appendix}
2766 \ProvidesPackage{interfaces-appendix}
2767   [2010/10/27 v1.2 easy control of appendices environment (FC)]
2768 \RequirePackage{interfaces-base}
2769 \itf@Check@Package{appendix}
2770 \itf@pgfkeys

```

\appendices

```

2771 \let\itf@appendices@pp\appendices
2772 \let\itf@endappendices@pp\endappendices
2773 \let\itf@appendices@pp\appendices
2774 \let\itf@endappendices@pp\endappendices
2775 \renewenvironment{appendices}[1][]{%
2776   \pgfqkeys{/itf/appendix/appendices}{#1}%
2777   \itf@appendices@pp
2778 }
2779 {\itf@endappendices@pp}

2780 \pgfqkeys{/itf/appendix/appendices}{%
2781   title/.store as code in cs=appendixpagename,%
2782   title/.append code=\ifx\appendixpagename\empty\@dopage@ppfalse
2783   \else\@dopage@pptrue\fi,%
2784   title/.value required,%
2785   intoc/.is if=@dotoc@pp,%
2786   intoc/title/.store as code in cs=appendixtocname,%
2787   intoc/title/.append code=\ifx\appendixtocname\empty\@dotoc@ppfalse
2788   \else\@dotoc@pptrue\fi,%
2789   intoc/title/.default=\pgfkeysvalueof{/itf/appendix/appendices/title},%
2790   section/.is enum={section,chapter},%
2791   section/.append code={\@chapter@ppfalse
2792     \ifnum\pgfkeysvalueof{/itf/appendix/appendices/section/.number}=\z@
2793     \else\ifundef\chapter
2794       {\PackageWarning{interfaces-appendix}{%
2795         You asked chapter-style appendices but your
2796         \MessageBreak current class does not provide chapters!}}
2797       \@chapter@pptrue
2798     \fi},%
2799   chapter/.style={section=chapter},%
2800   chapter/.value forbidden,%
2801 }% keys for appendices environment

```

2802 </appendix>

## 21.16 Interface embedfile : \embedthisfile

```

2803 <*embedfile>
2804 \ProvidesPackage{interfaces-embedfile}
2805   [2010/10/27 v1.2 easy macros to embed files into pdf (FC)]
2806 \RequirePackage{interfaces-base}
2807 \itf@Check@Package{embedfile}
2808 \newrobustcmd*\embedthisfile{\@ifstar
2809   \embedthisfile@main
2810   \embedthisfile@all
2811 }% \embedthisfile
2812 \@onlypreamble\embedthisfile
2813 \def\embedthisfile@main{\embedfile{\jobname.tex}}
2814 \def\embedthisfile@all{%
2815   \embedthisfile@main
2816   \AfterPreamble{%
2817     \ltx@ifundefined{@listfiles}%
2818       {\let\@listfiles\@empty}% to avoid: \global\let\@filelist\relax in \document
2819     {}%
2820   }%
2821   \gpreto@enddocumenthook{%
2822     \let\do\itf@EmbedOne
2823     \expandafter\docs vlist\expandafter{\@filelist}%
2824   }%
2825 }% \embedthisfile@all
2826 \def\itf@EmbedOne#1{\itf@Embed@ne#1.tex}@nil}
2827 \def\itf@Embed@ne#1.tex#2@nil{%
2828   \ltx@ifundefined{cp#1}%
2829   {}%
2830   {\ifblank{#2}%
2831     {}%
2832     {\embedfile{#1.tex}}}}%
2833 }% \itf@Embed@ne
2834 </embedfile>

```

## 21.17 Interface environ

```

2835 <*environ>
2836 \ProvidesPackage{interfaces-environ}
2837   [2010/07/23 v1.0 ReNewEnviron = RenewEnviron (FC)]
2838 \RequirePackage{interfaces-base}
2839 \AfterPackage{environ}{%
2840   \ifundef\ReNewEnviron
2841     {\let\ReNewEnviron\RenewEnviron}
2842   {}%
2843 }%
2844 </environ>

```

## 21.18 Interface umrand

```

2845 <*umrand>
2846 \ProvidesPackage{interfaces-umrand}
2847   [2010/07/23 v1.0 patch for umrand.sty ifnotempty (FC)]
2848 \RequirePackage{interfaces-base}
2849 \BeforePackage{umrand}{%
2850   \let\itf@newif\newif
2851   \def\itf@tp{\ifnotempty}%
2852   \def\newif#1{\def\x{#1}\ifx\x\itf@tp \expandafter\@gobble
2853     \else\expandafter\ltx@newif\fi{#1}}%
2854 }%
2855 \AfterPackage{umrand}{%
2856   \let\newif\itf@newif
2857   \let\itf@newif\@undefined

```

```
2858 }
2859 </umrand>
```

## 21.19 Interface `scrlfile`

```
2860 <*scrlfile>
2861 \ProvidesPackage{interfaces-scrlfile}
2862   [2010/10/27 v1.2 scrlfile hooks improved (FC)]
2863 \RequirePackage{interfaces-base}
```

\@pkgextension In L<sup>A</sup>T<sub>E</sub>X they are defined \onelpreamble. So we use the ltxcmds equivalents:

```
\@clsextension
2864 \AfterEndPreamble{%
2865   \let\@pkgextension\ltx@pkgextension
2866   \let\@clsextension\ltx@clsextension
2867   \let\@ifpackageloaded\ltx@ifpackageloaded
2868   \let\@ifclassloaded\ltx@ifclassloaded
2869 }
```

\scr@load@hook

```
2870 \renewrobustcmd*\scr@load@hook[2]{%
2871   \csuse{#2-@#1}%
2872   \ifcsname#2-@#1-\string\keep\endcsname\else\global\csundef{#2-@#1}\fi
2873 }% \scr@load@hook
```

\scr@set@load@hook (optimisation)

```
2874 \renewrobustcmd*\scr@set@load@hook[2]{\csgappto{#2-@#1}}
```

\BeforeFile Addition of star forms \*: the hooks are not canceled after input (in case a file is input more than once...)

```
\AfterFile
2875 \renewrobustcmd*\BeforeFile{\@ifstar
2876   {\itf@s@LoadFile{before}}
2877   {\itf@LoadFile{before}}%
2878 }% \BeforeFile
2879 \renewrobustcmd*\AfterFile{\@ifstar
2880   {\itf@s@LoadFile{after}}
2881   {\itf@LoadFile{after}}%
2882 }% \AfterFile
```

```
2883 \def\itf@s@LoadFile#1#2{%
2884   \global\cslet{#2-@#1-\string\keep}{\empty}
2885   \scr@set@load@hook{#1}{#2}%
2886 }% \itf@s@LoadFile
2887 \def\itf@LoadFile#1#2{%
2888   \global\csundef{#2-@#1-\string\keep}%
2889   \scr@set@load@hook{#1}{#2}%
2890 }% \itf@LoadFile
```

\@input (patch) This modification allows \@input to behaves like \InputIfFileExists as far as hooks are concerned.

```
2891 \renewcommand*\@input[1]{\IfFileExists{#1}%
2892   {\scr@load@hook{before}{#1}%
2893    @@input@filef@nd
2894    \scr@load@hook{after}{#1}}%
2895   {\typeout{No file #1.}}%
2896 }% \@input
```

2897 </scrlfile>

## 21.20 † Interface pgfkeys (⇨ pgfmanual)

```
2898 <*pgfkeys>
2899 \ProvidesPackage{interfaces-pgfkeys}
2900   [2010/11/26 v2.4 pgfkeys handlers definitions (FC)]
2901 \RequirePackage{interfaces-base}
2902 \ifdefined\pgfkeys@ifexecutehandler % pgf version 2.1
2903 \def\itf@pgfkeys{%
2904   \global\let\pgfkeys@unpack \itf@pgfkeys@unpack
2905   \global\let\pgfkeys@case@three \itf@pgfkeys@case@three
2906   \global\let\pgfkeys@case@three@handleall\itf@pgfkeys@case@three@handleall
2907 }% \itf@pgfkeys
2908 \else
2909 \def\itf@pgfkeys{%
2910   \global\let\pgfkeys@unpack \itf@pgfkeys@unpack
2911   \global\let\pgfkeys@case@three \itf@pgfkeys@case@three
2912   \global\let\pgfkeys@saddvalue \itf@pgfkeys@saddvalue
2913   \global\let\pgfkeys@exp@call \itf@pgfkeys@exp@call
2914 }% \itf@pgfkeys
2915 \fi
2916 \AtBeginDocument{\itf@pgfkeys \let\itf@pgfkeys \relax}
```

### Some new pgfkeys macros

\pgfkeysmeaning

```
2917 \providecommand*\pgfkeysmeaning[1]{\pgfkeysifdefined{#1}%
2918   {\expandafter\meaning\csname pgfk##1\endcsname}%
2919   {\meaning\@undefined}%
2920 }% \pgfkeysmeaning
```

\pgfkeysvalueof@unexpanded

```
2921 \def\pgfkeysvalueof@unexpanded#1{%
2922   \unexpanded\expandafter\expandafter\expandafter{%
2923     \csname pgfk##1\endcsname}%
2924 }% \pgfkeysvalueof@unexpanded
```

### Some pgfkeys macros redefinition/corrections

\pgfkeysaddvalue (bug in pgfkeysaddvalue for pgf v2.0, fixed in v2.1)

```
2925 \ifdefined\pgfkeys@ifexecutehandler \else % pgf v2.1: bug fixed
2926 \def\itf@pgfkeysaddvalue##1##2##3{%
2927   \edef\pgfkeys@global@temp{%
2928     \unexpanded{##2}%
2929     \ifcsname pgfk##1\endcsname
2930       \unexpanded\expandafter\expandafter\expandafter{%
2931         \csname pgfk##1\endcsname}%
2932     \fi
2933     \unexpanded{##3}}%
2934   \pgfkeyslet##1\pgfkeys@global@temp
2935 }% \itf@pgfkeysaddvalue
2936 \fi
```

\pgfkeysesetvalue  
\pgfkeyseaddvalue

```
2937 \ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf version 2.1
2938 \def\pgfkeysesetvalue##1##2{%
2939   \expandafter\edef\csname pgfk##1\endcsname{##2}}
```

```

2940 }% \pgfkeysEsetvalue
2941 \ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf v2.1
2942 \def\pgfkeysEaddvalue#1#2#3{%
2943   \edef\pgfkeys@global@temp{%
2944     #2%
2945     \ifcsname pgfk@#1\endcsname
2946       \unexpanded\expandafter\expandafter\expandafter{%
2947         \csname pgfk@#1\endcsname}%
2948       \fi
2949     #3}%
2950   \pgfkeyslet{#1}\pgfkeys@global@temp
2951 }% \pgfkeysEaddvalue

```

\pgfkeys@exp@call Missed the braces around the argument (in case the argument contains a comma or an = sign...):

```

2952 %% missed a pair of braces around the argument in pgfkeys.code.tex (pgf v2.0)
2953 %% ( the code could break if it contains = or , )
2954 \ifdefined\pgfkeys@ifexecutehandler\else % (bug corrected in pgf v2.1)
2955   \def\itf@pgfkeys@exp@call#1{\pgfkeysalso{\pgfkeyscurrentpath={#1}}}%
2956 \fi

```

## Handlers `/blank`

```

2957 %% The value is now checked by \itf@pgfkeys@default@blank@required:
2958 \ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf v2.1
2959 \def\itf@pgfkeys@unpack#1=#2=#3\pgfkeys@stop{%
2960   \pgfkeys@spdef\pgfkeyscurrentkey{#1}%
2961   \edef\pgfkeyscurrentkey{\pgfkeyscurrentkey}%
2962   \ifx\pgfkeyscurrentkey\pgfkeys@empty
2963     % Skip
2964   \else
2965     \pgfkeys@add@path@as@needed
2966     \pgfkeys@spdef\pgfkeyscurrentvalue{#2}%
2967     \itf@pgfkeys@default@blank@required % <FC>
2968           \pgfkeyscurrentkey % <FC>
2969           \pgfkeys@case@one % <FC>
2970   \fi
2971 }% \itf@pgfkeys@unpack

```

\itf@pgfkeys@default@blank@required

Handle the case: `./@def → ./@blank → ./@def ...`

```

2972 \def\itf@pgfkeys@default@blank@required#1#2{%
2973   \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text% Hmm... no value
2974     \pgfkeysifdefined{#1/.@def}%
2975       {\pgfkeysgetvalue{#1/.@def}\pgfkeyscurrentvalue}%
2976     {}% no default, so leave it
2977   \fi
2978   \ifx\pgfkeyscurrentvalue\pgfkeys@empty
2979     \pgfkeysifdefined{#1/.@blank}%
2980       {\pgfkeysgetvalue{#1/.@blank}\pgfkeyscurrentvalue}%
2981     {}% no /.blank specified
2982   \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text% in case /.blank -> \pgfkeysnovalue
2983     \pgfkeysifdefined{#1/.@def}%
2984       {\pgfkeysgetvalue{#1/.@def}\pgfkeyscurrentvalue}%
2985     {}% no default, so leave it
2986   \fi\fi
2987   \ifx\pgfkeyscurrentvalue\pgfkeysvaluerequired
2988     \pgfkeysvalueof{/errors/value required/.@cmd}\pgfkeyscurrentkey
2989                           \pgfkeyscurrentvalue
2990                           \pgfeov
2991   \else
2992     #2%

```

```
2993   \fi
2994 }% \itf@pgfkeys@default@blank@required
```

### Allowing `/default` values (and .blank values) for handlers:

```
2995 %% To handle the cases of: /handler/.default= /handler/.blank= /handler/.value required,
2996 %% it is necessary to redefine \pgfkeys@case@three
2997 \def\itf@pgfkeys@case@three{%
2998   \pgfkeys@split@path
2999   \pgfkeysifdefined{/handlers/\pgfkeyscurrentname/.@cmd}%
3000   {%
3001     \itf@pgfkeys@default@blank@required{/handlers/\pgfkeyscurrentname}%
3002     {\pgfkeysgetvalue{/handlers/\pgfkeyscurrentname/.@cmd}\pgfkeys@code
3003      \expandafter\pgfkeys@code\pgfkeyscurrentvalue\pgfeov}%
3004   }
3005   \pgfkeys@unknown % no handler, thus the key is unknown
3006 }% \itf@pgfkeys@case@three
3007 \ifdefined\pgfkeys@ifexecutehandler
3008   \let\itf@pgfkeys@case@three@handleall \itf@pgfkeys@case@three
3009 \fi
```

### Loading interfaces modifications for pgfkeys

```
3010 \itf@pgfkeys
```

### Handlers definition: `/alias`, .blank

```
3011 \pgfkeys{%
3012   /handlers/.alias/.code=\itf@pgfkeys@ifaliasexists{-#1}{%
3013     \pgfkeysedef\pgfkeyscurrentpath{%
3014       \noexpand\pgfkeysalso{\pgfkeysdefaultpath#1={##1}}},%
3015     /handlers/.alias/.value required,%
3016   /handlers/.blank/.code=\pgfkeyssetvalue{\pgfkeyscurrentpath/.@blank}{-#1},%
3017     /handlers/.blank/.default=\pgfkeysnovalue,%
3018 }% /.alias and /.blank
3019 \def\itf@pgfkeys@ifaliasexists#1#2{%
3020   \pgfkeysifdefined{\pgfkeysdefaultpath#1/.@cmd}{#2}
3021   {\pgfkeysifdefined{\pgfkeysdefaultpath#1
3022     {#2}
3023     {\itf@pgfkeys@aliaserror{#1}}}%
3024 }% \itf@pgfkeys@ifaliasexists
3025 \def\itf@pgfkeys@aliaserror#1{%
3026   \PackageError{interfaces-pgfkeys}
3027   {You want the key \pgfkeyscurrentpath\space
3028    \MessageBreak to be an alias for \pgfkeysdefaultpath#1
3029    \MessageBreak but the key \pgfkeysdefaultpath#1
3030    \MessageBreak is not defined!}@\eha@\gobble
3031 }% \itf@pgfkeys@aliaserror
```

**Handlers definition: `/alias*`** For use with handlers `/store as glue` or `/store as glue in cs etc..` when a handler defines key with `*` version and/or `+` version and/or `-` versions.

Then, the `/alias*` handler is a facility to create aliases for starred `*`, `+`, `-` keys in a batch (as long as the alias exists, of course).

```
3032 \pgfkeys{%
3033   /handlers/.alias*/.code=\itf@pgfkeys@ifaliasexists{-#1}{%
3034     \pgfkeysedef\pgfkeyscurrentpath{\noexpand\pgfkeysalso{\pgfkeysdefaultpath#1={##1}}}{%
3035     @tfor\x:=+-*\do{%
3036       \pgfkeysifdefined{\pgfkeysdefaultpath#1\x/.@cmd}
3037       {\pgfkeysedef{\pgfkeyscurrentpath\x}{%
```

```

3038           \noexpand\pgfkeysalso{\pgfkeysdefaultpath#1\x={##1}}}}
3039           {}}%
3040       },%
3041   /handlers/.alias*/.value required,%
3042 }% /.alias*

```

### Handlers definition: `/is private`

```

3043 \pgfkeys{%
3044   /handlers/.is private/.code=\pgfkeysdef\pgfkeyscurrentpath{%
3045     \PackageError{#1}{Key \pgfkeyscurrentkey\space is private
3046     \MessageBreak and should not be modified}\@ehd},%
3047   /handlers/.is private to class/.code=\pgfkeysdef\pgfkeyscurrentpath{%
3048     \ClassError{#1}{Key \pgfkeyscurrentkey\space is private
3049     \MessageBreak and should not be modified}\@ehd}%
3050 }% /.is private

```

### Handlers definition: `/true /false /on /off`

```

3051 \def\itf@pgfkeys@choice[#1]#2#3{%
3052   \pgfkeys{\pgfkeyscurrentpath/.cd,%
3053     .is choice,%
3054     #2/.code={#3},%
3055     .default/.expanded=@firstoftwo#1}%
3056 }% \itf@pgfkeys@choice
3057 \pgfkeys{%
3058   /handlers/.true/.code=\itf@pgfkeys@choice[{true}{false}]{true}{#1},%
3059   /handlers/.false/.code=\itf@pgfkeys@choice[{true}{false}]{false}{#1},%
3060   /handlers/.on/.code=\itf@pgfkeys@choice[{on}{off}]{on}{#1},%
3061   /handlers/.off/.code=\itf@pgfkeys@choice[{on}{off}]{off}{#1},%
3062 }% /.true /.false

```

### Handlers definition: `/store in cs /estore in cs etc.`

```

3063 \pgfkeys{%
3064   /handlers/.store in cs/.code=\pgfkeysdef\pgfkeyscurrentpath{\csdef{#1}{##1}},%
3065   /handlers/.estore in cs/.code=\pgfkeysdef\pgfkeyscurrentpath{\csedef{#1}{##1}},%
3066 }% /.store in cs

```

### Handler definition: `/store as code`

```

3067% /.store as code handlers
3068 \pgfkeys{%
3069   /handlers/.store as code/.code={%
3070     \pgfkeysedef\pgfkeyscurrentpath{%
3071       \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
3072     \pgfkeyslet\pgfkeyscurrentpath@\empty
3073     \pgfkeyslet{\pgfkeyscurrentpath/.@def}@\empty
3074     @tfor\x:=#1\do{%
3075       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3076         \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3077           \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
3078           \noexpand\unexpanded{##1}}}}%
3079     \pgfkeyslet{\pgfkeyscurrentpath\x/.@def}@\empty
3080   },%
3081   /handlers/.store as code/.default=*,%
3082 }% /.store as code

```

**Handlers definition: `/estore as code`**

```

3083 \pgfkeys{%
3084   /handlers/.estore as code/.code={%
3085     \pgfkeysedef\pgfkeyscurrentpath{%
3086       \noexpand\pgfkeysEsetvalue{\pgfkeyscurrentpath}{##1}}%
3087     \pgfkeyslet\pgfkeyscurrentpath@\empty%
3088     \@tfor\x:=#1\do{%
3089       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3090         \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3091           \noexpand\pgfkeysvalueof{unexpanded{\pgfkeyscurrentpath}}%
3092           \noexpand\unexpanded{##1}}}}%
3093     }},%
3094   /handlers/.estore as code/.default=*,%
3095 }% /.estore as code

```

**Handlers definition: `/store as code in cs=<cs-name>`**

```

3096 \pgfkeys{%
3097   /handlers/.store as code in cs/.code={%
3098     \pgfkeysedef\pgfkeyscurrentpath{%
3099       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text%
3100       \else\csdef{#1}{##1}\fi}%
3101     \@tfor\x:=*+\do{%
3102       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3103         \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3104           \noexpand\ifcsname#1\endcsname%
3105             \noexpand\expandafter\noexpand\expandonce%
3106             \noexpand\csname#1\endcsname%
3107             \noexpand\fi%
3108             \noexpand\unexpanded{##1}}}}%
3109       \pgfkeyslet{\pgfkeyscurrentpath\x/.@def}\@empty%
3110     }},%
3111   /handlers/.store as code in cs/.value required,%
3112 }% /.store as code in cs
3113 \pgfkeys{%
3114   /handlers/.estore as code in cs/.code={%
3115     \pgfkeysedef\pgfkeyscurrentpath{%
3116       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text%
3117       \else\csedef{#1}{##1}\fi}%
3118     \@tfor\x:=*+\do{%
3119       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3120         \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3121           \noexpand\ifcsname#1\endcsname%
3122             \noexpand\expandafter\noexpand\expandonce%
3123             \noexpand\csname#1\endcsname%
3124             \noexpand\fi%
3125             \noexpand\unexpanded{##1}}}}%
3126     }},% default if \pgfkeysnovalue which expands to \@empty
3127   /handlers/.estore as code in cs/.value required,%
3128 }% /.estore as code in cs

```

**Handlers definition: `/store as color, /store as color command`**

```

3129 \protected\def\itf@pgfk@color#1#2@nil{%
3130   \ifx@\let@token\color%
3131   \def\pgfkeyscurrentvalue{#2}%
3132   \else\ifx@\let@token\normalcolor%
3133   \def\pgfkeyscurrentvalue{default}%
3134   \else\ifx@\let@token\pgfkeysnovalue%
3135   \def\pgfkeyscurrentvalue{default}%
3136   \fi\fi\fi%
3137 }% \itf@pgfk@color
3138 \pgfkeys{%

```

```

3139 /handlers/.store as color/.code=%
3140     \pgfkeysedef\pgfkeyscurrentpath{%
3141         \futurelet\noexpand\let@token\itf@pgfk@color
3142             ##1\noexpand\pgfkeysnovalue\noexpand@nil
3143         \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
3144 }% /.store as color

```

### Handlers definition: `./store as color in cs=<cs-name>`

```

3145 \pgfkeys{%
3146     /handlers/.store as color in cs/.code=%
3147         \pgfkeysedef\pgfkeyscurrentpath{%
3148             \futurelet\noexpand\let@token\itf@pgfk@color
3149                 ##1\noexpand\pgfkeysnovalue\noexpand@nil
3150             \cslet{#1}\noexpand\pgfkeyscurrentvalue}%
3151 }% /.store as color in cs

```

### Handlers definition: `./store as color command`

```

3152 \protected\def\itf@pgfk@colorcmd#1@nil{%
3153     \ifcat @\noexpand\let@token
3154         \def\pgfkeyscurrentvalue{\color{#1}}%
3155     \else\ifcat 0\noexpand\let@token
3156         \def\pgfkeyscurrentvalue{\color{#1}}%
3157     \else\ifx\let@token@nil
3158         \let\pgfkeyscurrentvalue\normalcolor
3159     \fi\fi\fi
3160 }% \itf@pgfk@colorcmd
3161 \pgfkeys{%
3162     /handlers/.store as color command/.code=%
3163         \pgfkeysedef\pgfkeyscurrentpath{%
3164             \futurelet\noexpand\let@token\itf@pgfk@colorcmd
3165                 ##1\noexpand@nil
3166             \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
3167             \pgfkeyssetvalue{\pgfkeyscurrentpath/.@def}\normalcolor
3168 }% /.store as color command

```

### Handlers definition: `./store as color command in cs=<cs-name>`

```

3169 \pgfkeys{%
3170     /handlers/.store as color command in cs/.code=%
3171         \pgfkeysedef\pgfkeyscurrentpath{%
3172             \futurelet\noexpand\let@token\itf@pgfk@colorcmd
3173                 ##1\noexpand@nil
3174             \cslet{#1}\noexpand\pgfkeyscurrentvalue}%
3175             \pgfkeyssetvalue{\pgfkeyscurrentpath/.@def}\normalcolor
3176 }% /.store as color command in cs

```

### Handlers definition `./store as number`

```

3177 \pgfkeys{%
3178     /handlers/.store as number/.code=%
3179         \pgfkeysedef\pgfkeyscurrentpath{%
3180             \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\numexpr##1\relax}%
3181             \pgfkeyslet\pgfkeyscurrentpath\z@
3182             \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
3183             \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3184             \@tfor\x:=#1\do{%
3185                 \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3186                     \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded=%
3187                         \noexpand\pgfkeysvalueof{unexpanded{\pgfkeyscurrentpath}}%
3188                         \x

```

```

3189          \numexpr\unexpanded{##1}\relax} }%
3190      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3191      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%
3192  }},%
3193 /handlers/.store as number/.default=+-*,%
3194 }% /.store as number

```

### Handlers definition: `./estore as number`

```

3195 \pgfkeys{%
3196   /handlers/.estore as number/.code={%
3197     \pgfkeysedef\pgfkeyscurrentpath{%
3198       \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{%
3199         \noexpand\number\numexpr##1\relax}} }%
3200     \pgfkeyslet\pgfkeyscurrentpath\z@%
3201     \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@%
3202     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@%
3203     \@tfor\x:=#1\do{%
3204       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3205         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3206           \noexpand\pgfkeysvalueof{\pgfkeyscurrentpath}%
3207           \x
3208           \numexpr##1\relax}} }%
3209     }},%
3210   /handlers/.estore as number/.default=+-*,%
3211 }% /.estore as number

```

### `./store as number in cs` Handlers definition: `./store as number in cs`

```

3212 \pgfkeys{%
3213   /handlers/.store as number in cs/.code={%
3214     \pgfkeysedef\pgfkeyscurrentpath{%
3215       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3216       \else\csdef{#1}{\numexpr##1\relax}\fi} }%
3217     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@%
3218     \@tfor\x:=+-*\do{%
3219       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3220         \letcs\noexpand\pgfkeys@temp{%
3221           \noexpand\ifcsname#1\endcsname
3222             #1\noexpand\else\if*\x@ne\else z@\fi\noexpand\fi}} }%
3223       \edef\noexpand\pgfkeys@temp{%
3224         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3225           \noexpand\expandonce\noexpand\pgfkeys@temp
3226           \x
3227           \numexpr\noexpand\unexpanded{##1}\relax}} }%
3228     }\noexpand\pgfkeys@temp} }%
3229   \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3230   \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%
3231 }},%
3232 /handlers/.store as number in cs/.value required,%
3233 }% /.store as number in cs

```

### Handlers definition: `./estore as number in cs`

```

3234 \pgfkeys{%
3235   /handlers/.estore as number in cs/.code={%
3236     \pgfkeysedef\pgfkeyscurrentpath{%
3237       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3238       \else\csedef{#1}{\number\numexpr##1\relax}\fi} }%
3239     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@%
3240     \@tfor\x:=+-*\do{%
3241       \pgfkeysedef{\pgfkeyscurrentpath\x}{%

```

```

3242     \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3243         \noexpand\csname\noexpand\ifcsname#1\endcsname
3244             #1\noexpand\else\x @ne\else z@\fi\noexpand\fi\endcsname
3245             \x
3246             \numexpr##1\relax}%
3247     \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3248     \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%
3249 }%,%
3250 /handlers/.estore as number in cs/.value required,%
3251 }% /.estore as number in cs

```

### Handlers definition: `./store in counter cs`

```

3252 \pgfkeys{%
3253     /handlers/.store in counter cs/.code={%
3254         \pgfkeysdef\pgfkeyscurrentpath{%
3255             \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3256             \else\csname#1\endcsname\numexpr##1\relax\fi}%
3257             \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3258             \@tfor\x:=+-*\do{%
3259                 \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3260                     \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3261                         \noexpand\csname\noexpand\ifcsname#1\endcsname
3262                             #1\noexpand\else\x @ne\else z@\fi\noexpand\fi\endcsname
3263                             \x
3264                             \numexpr##1\relax}%
3265                         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3266                         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%
3267 }%,%
3268             /handlers/.store in counter cs/.value required,%
3269 }% /.store in counter cs

```

### Handlers definition: `./store as glue`

```

3270 \pgfkeys{%
3271     /handlers/.store as glue/.code={%
3272         \pgfkeysedef\pgfkeyscurrentpath{%
3273             \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\glueexpr##1\relax}}%
3274             \pgfkeyslet\pgfkeyscurrentpath\z@skip
3275             \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@skip
3276             \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
3277             \@tfor\x:=#1\do{%
3278                 \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3279                     \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded=%
3280                         \noexpand\pgfkeysvalueof{unexpanded{\pgfkeyscurrentpath}}%
3281                         \x
3282                         \if*\x\noexpand\itf@units@scale##1!
3283                         \else\glueexpr\noexpand\unexpanded{##1}\relax\fi}%
3284                     \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@skip\fi}%
3285                     \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@skip\fi}%
3286                 }%,%
3287             /handlers/.store as glue/.default=+-*,%
3288 }% /.store as glue

```

### Handlers definition: `./estore as glue`

```

3289 \pgfkeys{%
3290     /handlers/.estore as glue/.code={%
3291         \pgfkeysedef{\pgfkeyscurrentpath}{%
3292             \noexpand\pgfkeysEsetvalue{\pgfkeyscurrentpath}{%
3293                 \noexpand\the\glueexpr##1\relax}}%
3294             \pgfkeyslet\pgfkeyscurrentpath\z@skip

```

```

3295     \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@skip
3296     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
3297     \@tfor\x:=#1\do{%
3298         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3299             \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3300                 \noexpand\pgfkeysvalueof{\pgfkeyscurrentpath}\x
3301                 \if*\x \noexpand\itf@units@scale##1!
3302                 \else\glueexpr##1\relax\fi}}%
3303         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@skip\fi}%
3304         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@skip\fi}%
3305     },%
3306     /handlers/.estore as glue/.default=+-*,%
3307 }% /.estore as glue

```

### Handlers definition: `/store as dimen`

```

3308 \pgfkeys{%
3309     /handlers/.store as dimen/.code={%
3310         \pgfkeysedef\pgfkeyscurrentpath{%
3311             \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\dimexpr##1\relax}}%
3312         \pgfkeyslet\pgfkeyscurrentpath\z@
3313         \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
3314         \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3315         \@tfor\x:=#1\do{%
3316             \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3317                 \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3318                     \noexpand\pgfkeysvalueof{unexpanded{\pgfkeyscurrentpath}%
3319                     \x
3320                     \if*\x \noexpand\itf@units@scale##1!
3321                     \else\dimexpr\noexpand\unexpanded{##1}\relax\fi}}}}%
3322             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3323             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%
3324         },%
3325     /handlers/.store as dimen/.default=+-*,%
3326 }% /.store as dimen

```

### Handlers definition: `/estore as dimen`

```

3327 \pgfkeys{%
3328     /handlers/.estore as dimen/.code={%
3329         \pgfkeysedef\pgfkeyscurrentpath{%
3330             \noexpand\pgfkeysEsetvalue{\pgfkeyscurrentpath}{%
3331                 \noexpand\the\dimexpr##1\relax}}%
3332         \pgfkeyslet\pgfkeyscurrentpath\z@
3333         \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
3334         \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3335         \@tfor\x:=#1\do{%
3336             \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3337                 \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3338                     \noexpand\pgfkeysvalueof{\pgfkeyscurrentpath}\x
3339                     \if*\x \noexpand\itf@units@scale##1!
3340                     \else \dimexpr##1\relax\fi}}%
3341             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3342             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%
3343         },%
3344     /handlers/.estore as dimen/.default=+-*,%
3345 }% /.estore as dimen

```

**Handlers definition: `./store as glue in cs=<cs-name>`**

```

3346 \pgfkeys{%
3347   /handlers/.store as glue in cs/.code={%
3348     \pgfkeysdef\pgfkeyscurrentpath{%
3349       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3350       \else\csdef{\#1}{\glueexpr##1\relax}\fi}%
3351     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
3352     @tfor\x:=+-*\do{%
3353       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3354         \letcs\noexpand\pgfkeys@temp{%
3355           \noexpand\ifcsname#1\endcsname
3356             #1\noexpand\else z@skip\noexpand\fi}%
3357         \edef\noexpand\pgfkeys@temp{%
3358           \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3359             \noexpand\expandonce\noexpand\pgfkeys@temp
3360             \x
3361             \if*\x\noexpand\itf@units@scale##1!
3362             \else\glueexpr\noexpand\unexpanded{##1}\relax\fi}%
3363           }\noexpand\pgfkeys@temp}%
3364         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@\ne\else\z@skip\fi}%
3365         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@\ne\else\z@skip\fi}%
3366     }},%
3367   /handlers/.store as glue in cs/.value required,%
3368 }% /.store as glue in cs

```

**Handlers definition: `./estore as glue in cs=<cs-name>`**

```

3369 \pgfkeys{%
3370   /handlers/.estore as glue in cs/.code={%
3371     \pgfkeysdef\pgfkeyscurrentpath{%
3372       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3373       \else\csedef{\#1}{\the\glueexpr##1\relax}\fi}%
3374     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
3375     @tfor\x:=+-*\do{%
3376       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3377         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3378           \noexpand\csname\noexpand\ifcsname#1\endcsname
3379             #1\noexpand\else z@skip\noexpand\fi\endcsname
3380             \x
3381             \if*\x\noexpand\itf@units@scale##1!
3382             \else\glueexpr##1\relax\fi}%
3383         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@\ne\else\z@skip\fi}%
3384         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@\ne\else\z@skip\fi}%
3385     }},%
3386   /handlers/.etore as glue in cs/.value required,%
3387 }% /.estore as glue in cs

```

**Handlers definition: `./store in skip cs`** This is a variant of `./store as glue in cs` when the control sequence in a `\skip` (*i.e.* a length). The skip is given by its name, not as a control sequence.

```

3388 \pgfkeys{%
3389   /handlers/.store in skip cs/.code={%
3390     \pgfkeysdef\pgfkeyscurrentpath{%
3391       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3392       \else\csname#1\endcsname\glueexpr##1\relax\fi}%
3393     \pgfkeyslet{/pgfkeyscurrentpath/.@blank}\z@skip
3394     @tfor\x:=+-*\do{%
3395       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3396         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3397           \csname#1\endcsname % should have been defined as a skip (not expandable)
3398           \x
3399           \if*\x\noexpand\itf@units@scale##1!

```

```

3400          \else\glueexpr##1\relax\fi}}%
3401      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@\ne\else\z@skip\fi}%
3402      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@\ne\else\z@skip\fi}%
3403  },%
3404 /handlers/.store in skip cs/.value required,%
3405 }% /.store in skip cs

```

### Handlers definition: `./store as dimen in cs=<cs-name>`

```

3406 \pgfkeys{%
3407   /handlers/.store as dimen in cs/.code={%
3408     \pgfkeysdef\pgfkeyscurrentpath{%
3409       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3410       \else\csdef{\#1}{\dimexpr##1\relax}\fi}%
3411     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3412     \atfor\x:=+-*\do{%
3413       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3414         \letcs\noexpand\pgfkeys@temp{%
3415           \ifcsname#1\endcsname#1\else z@\fi}%
3416         \edef\noexpand\pgfkeys@temp{%
3417           \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3418             \noexpand\expandonce\noexpand\pgfkeys@temp
3419             \x
3420             \if*\x\noexpand\itf@units@scale##1!
3421             \else\dimexpr\noexpand\unexpanded{##1}\fi}%
3422           \noexpand\pgfkeys@temp}%
3423         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@\ne\else\z@\fi}%
3424         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@\ne\else\z@\fi}%
3425     },%
3426   /handlers/.store as dimen in cs/.value required,%
3427 }% /.store as dimen in cs {csname}{+-}

```

### Handlers definition: `./estore as dimen in cs=<cs-name>`

```

3428 \pgfkeys{%
3429   /handlers/.estore as dimen in cs/.code={%
3430     \pgfkeysdef\pgfkeyscurrentpath{%
3431       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3432       \else \@defaultunits\itf@sk ##1pt\relax@nnil
3433       \csedef{\#1}{\the\dimexpr\itf@sk\relax}\fi}%
3434     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3435     \atfor\x:=+-*\do{%
3436       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3437         \noexpand\ifcsname#1\endcsname
3438           \noexpand@\defaultunits\itf@sk
3439             \noexpand\csname#1\endcsname pt\relax\noexpand@nnil
3440           \noexpand\else\itf@sk\z@\noexpand\fi
3441           \if*\x
3442             \itf@sk\dimexpr\itf@sk*\noexpand\itf@units@scale##1!\relax
3443           \else
3444             \noexpand@\defaultunits@tempdima ##1pt\relax\noexpand@nnil
3445             \advance\itf@sk\x@tempdima
3446           \fi
3447           \noexpand\pgfkeysalso{\pgfkeyscurrentpath=\itf@sk}%
3448         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@\ne\else\z@\fi}%
3449         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@\ne\else\z@\fi}%
3450     },%
3451   /handlers/.etore as dimen in cs/.value required,%
3452 }% /.estore as dimen in cs

```

**Handlers definition: `./store in dimen cs`** This is a variant of `./store as dimen in cs` when the control sequence in a `\dimen`. The `dimen` is given by its name, not as a control sequence.

```

3453 \pgfkeys{%
3454   /handlers/.store in dimen cs/.code={%
3455     \pgfkeysdef\pgfkeyscurrentpath{%
3456       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3457       \else\csname#1\endcsname\dimexpr##1\relax\fi}%
3458     \pgfkeyslet{/pgfkeyscurrentpath/.@blank}\z@
3459     \@tfor\x:=+-*\do{%
3460       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3461         \if*\x \else
3462           \noexpand@\defaultunits\itf@sk ##1pt\relax\noexpand@nnil
3463         \fi
3464           \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3465             \csname#1\endcsname % has been defined as a dimen (not expandable)
3466             \x
3467             \if*\x \noexpand\itf@units@scale##1!
3468             \else\itf@sk\fi}%
3469           \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@\ne\else\z@\fi}%
3470           \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@\ne\else\z@\fi}%
3471         }},%
3472   /handlers/.store in dimen cs/.value required,%
```

3473 }% /.store in dimen cs

**Handlers definition: `./is multiple choice`**

```

3474 \pgfkeys{%
3475   /handlers/.is multiple choice/.code=%
3476     \pgfkeys{\pgfkeyscurrentpath/.cd,%
3477       .unknown/.style={/errors/unknown choice value=\pgfkeyscurrentkey\pgfkeyscurrentvalue},%
3478       .code=\expandafter\pgfkeys\expandafter{\pgfkeyscurrentkey/.cd,###1}%
3479     },%
3480   /handlers/.is multiple choice/.value forbidden,%
```

3481 }% /.is multiple choice

**Handlers definition: `./is enum`**

```

3482 \pgfkeys{%
3483   /handlers/.is enum/.code={%
3484     \itf@cnt\z@
3485     \@for\x:=\pgfkeyscurrentvalue\do{%
3486       \pgfkeysedef{\pgfkeyscurrentpath/\x}{%
3487         \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\x}%
3488         \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath/.number}{\the\itf@cnt}%
3489       \ifnum\itf@cnt=\z@
3490         \pgfkeyslet{\pgfkeyscurrentpath/.@def}\x
3491         \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\x
3492       \fi
3493       \advance\itf@cnt\@ne
3494     }%
3495       \pgfkeysalso{\pgfkeyscurrentpath/.is choice},%
3496   /handlers/.is enum/.value required,%
```

3497 }% /.is enum

3498

## 21.21 † Interface ↗ etoolbox - etoolbox-like commands

```

3499 /*etoolbox*/
3500 \ProvidesPackage{interfaces-etoolbox}
3501   [2010/10/27 v1.2 some more etoolbox-like commands (FC)]
3502 \RequirePackage{interfaces-base}
3503 \begingroup\catcode`\\&=3
3504   \long\gdef\etb@doitem#1&{\do{#1}}
3505 \endgroup

\preappto
\epreappto
\gpreappto 3506 \providerobustcmd\preappto[3]{%
3507   \edef#1{\unexpanded{#2}\ifdefined#1\expandonce#1\fi\unexpanded{#3}}%
3508 }% \preappto
3509 \providerobustcmd\epreappto[3]{%
3510   \edef#1{#2\ifdefined#1\expandonce#1\fi#3}%
3511 }% \epreappto
3512 \providerobustcmd*\gpreappto{\global\preappto}
3513 \providerobustcmd*\xpreappto{\global\epreappto}

\cspreappto
\csepreatto
\csgpreappto 3514 \providerobustcmd*\cspreappto[1]{%
3515   \csname itf@\ifcsname#1\endcsname
3516     preappto\else defpreapp\fi\expandafter\endcsname
3517           \csname#1\endcsname
3518 }% \cspreappto
3519 \long\def\itf@preappto#1#2#3{\edef#1{#2\expandonce#1#3}}
3520 \long\def\itf@defpreapp#1#2#3{\edef#1{#2#3}}
3521 \providerobustcmd*\csepreatto[1]{%
3522   \csname itf@\ifcsname#1\endcsname
3523     preappto\else defpreapp\fi\expandafter\endcsname
3524           \csname#1\endcsname
3525 }% \csepreatto
3526 \providerobustcmd*\csgpreappto{\global\cspreappto}
3527 \providerobustcmd*\csxpreappto{\global\csepreatto}

```

---

```

\removefrom
\eremovefrom
\gremovefrom 3528 \providerobustcmd\removefrom[2]{\in@false
3529   \long\def\itf@tp##1\itf@tp{%
3530     \in@true
3531     \edef#1{\unexpanded{##1}}%
3532   }\expandafter\itf@removefrom\expandafter{#1}{#2}%
3533 }% \removefrom
3534 \providerobustcmd\eremovefrom[2]{\begingroup
3535   \edef\x{\endgroup\removefrom\noexpand#1{#2}%
3536   }\x
3537 }% \eremovefrom
3538 \providerobustcmd\gremovefrom[2]{%
3539   \removefrom{#1}{#2}%
3540   \global\let#1=#1%
3541 }% \gremovefrom
3542 \providerobustcmd\xremovefrom[2]{%
3543   \eremovefrom{#1}{#2}%
3544   \global\let#1=#1%
3545 }% \xremovefrom

\itf@removefrom

```

```

3546 \long\def\itf@removefrom#1#2{%
  removes #2 (code) from #1 (hook)
3547   \def\in@@##1##2\in@@{\itf@tp##1##2\in@@@}%
3548   \def\in@@@##1\in@@@##2\in@@@{%
3549     \ifx\in@@#2\else##1\fi
3550   }\expandafter\in@@@\in@@#1\itf@tp\in@@@#2\in@@\in@@
3551 }% \itf@removefrom

```

```

\removefromstart
\eremovefromstart
\gremovefromstart
\xremovefromstart
3552 \newrobustcmd\removefromstart[2]{\in@false
3553   \long\def\itf@tp##1\itf@tp{%
3554     \in@true
3555     \edef#1{\unexpanded{##1}}%
3556   }\expandafter\itf@removefromstart\expandafter{#1}{#2}%
3557 }% \removefromstart
3558 \providerobustcmd\eremovefromstart[2]{\begingroup
3559   \edef\x{\endgroup\removefromstart\noexpand#1{#2}%
3560   }\x
3561 }% \eremovefromstart
3562 \providerobustcmd\gremovefromstart[2]{%
3563   \removefromstart{#1}{#2}%
3564   \global\let#1=#1
3565 }% \gremovefromstart
3566 \providerobustcmd\xremovefromstart[2]{%
3567   \eremovefromstart{#1}{#2}%
3568   \global\let#1=#1
3569 }% \xremovefromstart

```

\itf@removefromstart

```

3570 \long\def\itf@removefromstart#1#2{%
  removes #2 (code) from #1 (hook)
3571   \long\def\in@@##1##2\in@@{\##1\in@\itf@tp##2\in@@@}%
3572   \long\def\in@@@##1\in@@@##2\in@@@{%
3573     \ifx\in@@#2\fi
3574   }\expandafter\in@@@\in@@#1\itf@tp\in@@@#2\in@@
3575 }% \itf@removefromstart

```

3576 </etoolbox>

## 22 History

### [2010/11/26 v2.4]

- `interfaces-fancyhdr` : complete key set for header, footer and offset settings  
Now keys like `foot/inner` or `head/outer/offset` are available (ouf!).
- `interfaces-hypbmsec` has been completely rewritten and is now independant of `titlesec` and `interfaces-titlesec`.  
`\lastsectiontitle` etc. are defined by the mean of `\GetTitleString` (from H.O. eponym package).  
`interfaces-hypbmsec` now provides `\lastsectionanchor` when used with `hyperref`.
- `interfaces-marks` revisited: expandable macros `\thefirstmarks`, `\thebotmarks` and `\thetopmarks` are now expandable in exactly one step of expansion.  
`\marksthe` and `\marksthecs` does not use `\unexpanded` (better for the .log file to see the marks).  
Optimization for `\getthemarks` with incidence on `\ifmarksequal`.
- $\sim\backslash repeatcell$ : modification of the code. & alignment tab character is not activated and the “dirty trick” (according to D. Knuth) `\iffalse{\fi \ifnum0='}\fi` is used instead.
- $\sim\backslash htruncadjust$  produced an error when used with empty text arguments – fixed.
- Modification in `\bottomtitles`: `\bottomtitlespace` should be stored as a dimen, not a skip.
- $\sim\backslash removefromstart$  is now a `\long` macro.

### [2010/11/21 v2.3]

- `interfaces-fancyhdr` : new keys and new aliases for header, footer and offset settings.

### [2010/11/16 v2.2]

- Fix a bug in `interfaces-tocloft` (key `section/dotsep`).

### [2010/11/15 v2.1]

- Improved default and blank values for bookmark levels, based on `\ttll@<section-name>`
- Correction of a bug in `\setlist`: missed a comma
- Correction of a bug in `interfaces-fancyhdr` (fixed in `./fancy@hf` handler).

### [2010/10/31 v2.0]

- Comptability of `interfaces-pgfkeys` with pgf version 2.1
- Modification of the key `depth` for  $\sim\backslash tocsetup$  to be able to change the t.o.c. depth anywhere inside the document (just like bookmarks depths).
- handler `./defcounter` has been replaced by more powerful `./store in counter cs`

### [2010/10/27 v1.2]

- `interfaces-hypbmsec` needed some corrections.
- The `offset` keys for fancyhdr didn't work. Fixed.
- Correction of conversion `pt` to `mu` (catcodes...)
- Added `microtype` to the documentation...

### [2010/10/20 v1.0]

- First version.

## 23 References

- [1] *The docstrip program*; 2009/09/25 v2.5d; [CTAN:macros/latex/base/](http://CTAN:macros/latex/base/).
- [2] *some packages...*

# Appendix: README (for CTAN)

The `interfaces` package provides a small number of macros to modify the settings of a large number of parameters provided by Most Frequently Used Package (MFUP) for typesetting beautiful document with L<sup>A</sup>T<sub>E</sub>X.

`interfaces` is organised as different modules which are loaded after the master package is loaded. Each module can be loaded separately.

`\sectionformat`: interface for package `titlesec` to modifies the titles produced by the sectionning commands (and their bookmarks).

`\pagesetup`: interface for package `fancyhdr` to modify the current page style or create new page styles.

`\tocsetup`: interface for package `tocloft` to fine tune the aspect of the table of contents, list of figures / of tables. `\tocsetup` also applies to `\shorttableofcontents` provided by the `shorttoc` package.

`\repeatcell`: to create ‘dynamic’ tabulars, possibly with formula computation (`\numexpr`, `\pgfmathparse` or `\FPeval` formulas can be plugged in the tabular or array).

`\rowfont`: to modify the font and/or the alignment of each cell in a tabular/array row.

+ some macros to make easier the use of ε-T<sub>E</sub>X `\marks` registers (useful with `\sectionformat` and `\pagesetup`).

`interfaces` is mainly based on `scrlfile.sty` (provided in the Koma-Script bundle, but Koma-Script classes are not required), on `pgfkeys` and `etoolbox`.

`interfaces` defines some `pgfkeys` handlers designed specially to make key-value interface for other packages. Using those handlers allows to make an interface in a few minutes...

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

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