interfaces

interfaces with keys for other packages

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Abstract

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

interfaces is mainly based on pgfkeys[1] and scrlfile 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 {interfaces-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-scrlfile, 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=\marksthecs{section}{lastsectiontoc},% interfaces-hypbmsec
   mark=\markstheс{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 package,	run:	etex interfaces.dtx
⟶ To get the documentation	run (thrice):	pdflatex interfaces.dtx
To get the index,	run:	makeindex -s gind.ist interfaces.idx

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 .

interfaces [rev.3.1 – release] © 2010 – 2011 FC <florent.chervet at free.fr>

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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.

\quickprofile ⟨*number*⟩ {⟨ *code* ⟩}

\quickprofile is a quick profiler macro: {⟨*code*⟩} is expanded ⟨*number*⟩ times inside a \vbox.

The macro requires pdfTeX and the \pdfelapsedtime primitive.

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 \usetizlibrary }

\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.

Keys shorten> and shorten< have been set as aliases to shorten > and shorten < (original with space) and keys shorten<> and shorten <> have been set to style shorten > and shorten <.

\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

\papergraduate [options] displays a graduated paper on the whole page background,
or inside a pgfpicture :

\papergraduate [
- x = unit for x axis (default is 1cm),
- y = unit for y axis (default is 1cm),
- unit = sets both x and y,
- xcolor = color for horizontal graduations (default is magenta),
- ycolor = color for vertical graduations (default is cyan)
- color = sets both xcolor and ycolor
- xrule = true (default) or false: displays the horizontal rule or not,
- yrule = true (default) or false: displays the vertical rule or not,
- xrule/font [+,*] = font for the labels on the horizontal rule
- yrule/font [+,*] = font for the labels on the vertical rule
- norule = don't display the rules
- opacity = opacity for the graduations (default = .25)
- text opacity = opacity for the rules labels (default =.8)]

(coordinate) (coordinate);

\papergraduate is close to TikZ grid path and displays a real graduated paper.

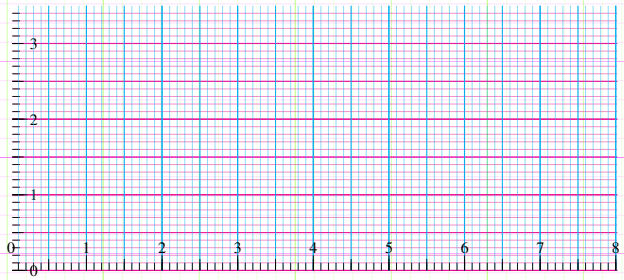
When used *outside* of a pgfpicture, \papergraduate alone draws a graduated paper as a wallpaper on the current page background (on this page with $x = 1in$ and $y = 1in$).

The code is fast because based on TEX primitive \leaders (faster than grid).

Examples:

```
\tikz{
      \coordinate (A) at (0,0);
      \papergraduate [opacity=.9]
          (A)     ++ (8cm,3.5cm); }

or  \papergraduate (A) to ++ (8cm,3.5cm);
or  \papergraduate (A) -- ++ (8cm,3.5cm);
```



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 substract and the * key scales.

MEMO

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

```
\sectionformat\section[hang]{%          this is the same as:    shape = hang
          font=\bfseries\scshape,
         label=\Roman{chapter}\ \textbullet\ \arabic{section},
     labelsep=\widthof{\textbullet},
       bottom=1ex plus.4ex minus.2ex,
          top+=3pt,
          mark=\markright{#1},% => this defines  \def\sectionmark#1{\markright{#1}}
         break=\goodbreak,     % => this defines  \def\sectionbreak{\goodbreak}
   thesection=\Roman{chapter}.\arabic{section},   % redefines  \def\thesection{...}
     bookmark={bold,color=blue}                  }
```

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

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

One swallow does not a summer make, interfaces-titlesec does not provides 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 (*ie.* TEX \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 globally sets the value of \bottomtitlespace (see titlesec documentation):

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

You can globally set a negativ 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}`

Where:
- `(out)` is used for the bookmark (outline)
- `[toc]` for tha 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:

`\lastsectiontitle`	expands to the title of the last `\section`
`\lastsectionbookmark`	expands to the text of the bookmark for the last `\section`
`\lastsectiontoc`	expands to the entry of the last `\section` in the table of contents
`\lastsectionanchor`	expands to the anchor name of the last `\section` if hyperref is used

Macros for each sectionning command are defined:

`\lastparttitle` `\lastchaptertitle`
`\lastsectiontitle` `\lastsubsectiontitle` `\lastsubsubsectiontitle`
`\lastparagraphtitle` `\lastsubparagraphtitle`

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

Assignation 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, *ie.* 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 interfaces-marks (page 13 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 shown 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, \lotsetup and \listofsetup

Setting the keys overwrites the previous value, unless the + key (append code/add for dimensions), the - key (substract) 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...

\tocsetup {
- depth = \setcounter {tocdepth} This is a LaTeX rather than tocloft's ... With interfaces you can change the t.o.c. depth anywhere inside your document, just like bookmarks depths (two runs are required)
- title|contentsname = redefines \contentsname
- title/top|title/top+|title/top-|title/top* = vertical space before the title (set|add|substract|scale)
- title/bottom |title/bottom+ *etc.* = vertical space after the title
- title/font|title/font+|title/format = the title font (set|append code)
- title/color|title/font/color = the color of the title (may also be defined in the key title/font)
- title/after|title/after+ = hook to execute just after the title (\cftaftertoctitle...)
- parskip|parskip+|parskip-|parskip* |parsep = modifies (or add to) \cftparskip
- dotsep = modifies \cftdotsep if no dimen is specified, *mu* is assumed, otherwise, conversion to *mu* ≃ 1*em*/18 is supplied. Default value is 4.5*mu* and blank value is the same as \cftnodots
- dot = modifies \cftdot, the dot used for leaders produced by \cftdotfill
- pagestyle = page style for the first page (\tocloftpagestyle)
- mark = the mark command: \cftmarktoc example: \chaptermark \contentsname
- before|before*|after|after* = hooks to execute before or after the command \tableofcontents

---

- twocolumns|columns|multicol = twocolumns=true is the same as columns=2 Makes a multicolumn table of contents. Package multicol is required!
- columns/sep|columns/sep+|columnsep *etc.* = sets (or add) a ⟨*dimen*⟩ to \columnsep
- columns/rule|columns/rule+|columnseprule *etc.* = sets (or add) a ⟨*dimen*⟩ to \columnseprule
- columns/color|columnseprulecolor = modifies \columnseprulecolor
- multicolsep|multicolsep+ *etc.* = modifies (or add) a ⟨*glue*⟩ to \multicolsep \multicolsep is the space added before and after multicol environment. default value: 0*ptplus*4*ptminus*3*pt*.
- multicols/beforebegin = hook just before \begin {⟨*⟩}multicols
- multicols/afterbegin|multicols/begin = hook just after \begin {⟨*⟩}multicols ...
- multicols/beforeend|multicols/end|multicols/after = hook just before \end {⟨*⟩}multicols ...
- multicols/afterend = ... and after the group close by \end {⟨*⟩}multicols

---

- label = the label for reference to the table of contents
- ref = the reference printed by \ref when referencing the table of contents (default is \contentsname. In any case, \nameref prints \contentsname.).

- bookmark/text = the bookmark text for the table of contents (if empty, no bookmark is set)
- bookmark/bold|bookmark/italic|bookmark/color = the bookmark style for the table of contents
- bookmark/level = the bookmark level: either a number or section or chapter 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).

\tocsetup {
- ¶/top|¶/top+|¶/skip|¶/beforeskip = modifies (or add to) the vertical ⟨*glue*⟩ before an entry
- ¶/indent|¶/indent+|¶/indent-|¶/indent* = modifies (or add *etc.*) the indentation of the entry
- ¶/font|¶/font+ = the font of the ¶ section title
- ¶/color|¶/font/color = the color of the ¶ section title (overwrites linkcolor if hyper-linked)
- ¶/number/width|number/width+ *etc.*|numwidth = modifies the space allowed to typeset the title numbers
- ¶/number/before|number/before+|presnum = code before the section number (see pseudo code below)
- ¶/number/after|number/after+ |aftersnum = code after the section number (see pseudo code below)
- ¶/title/before|title/before+ |aftersnumb = code before the title (*ie.* after the section number box)
- ¶/leader|¶/leaders = modifies the leader: the default is \cftdotfill {⟨*⟩}\cft¶dotsep
- ¶/dotsep = the space (in *mu*) between dots in the leader. Default is \cftdotsep and blank value is the same as \cftnodots
- ¶/pagefont|¶/page/font|¶/page/number/font = modifies the font used to typeset the page number
- ¶/page/number/color |¶/page/number/font/color = the color of the page numbers for this section (overwrites linkcolor if the page number if hyper-linked)
- ¶/page/after|¶/pagenumber/after|afterpnum = macro expanded after the page number is typeset

}

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 , and the sub-keys correspond to the entries. In fact:

- \tocsetup is a shortcut for \listofsetup {toc}
- \lofsetup is a shortcut for \listofsetup {lof} and
- \lotsetup is a shortcut for \listofsetup {lot}

Example:

preferably in the preamble

```
\newlistof[section]{answer}{ans}{List of Answers}
\newlistentry[answer]{subanswer}{ans}{1}
\listofsetup{ans}{
      depth=2,                              % can be changed inside the document body
      title=List of Answers of the section,% modifies the title
      title/font=\Huge,
      answer/font=\Large\bfseries,          % font spec.
      subanswer/font=\large\itshape,
      answer/dotsep=3mu,
      subanswer/dotsep=,                    % no dot
      subanswer/pagenumbers=off,
}
\addcontentsline{ans}{answer}{\numberline{1}First answer}
\addcontentsline{ans}{subanswer}{\numberline{1.1}First sub-answer}
\listofanswer
```

8 Interface ☞ fancyhdr : \pagesetup

\pagesetup [⟨pagestyle-name⟩]{

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

\pagesetup ∗ [⟨pagestyle-name⟩]{key = value}

\pagesetup resets all headers and footers, rules etc. and modifies the current (active) page style depending on the key=value pairs. \pagesetup [⟨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).

\pagesetup ∗ does not reset current values: keys that are not specified remains the same.

\pagesetup ∗ [⟨page-style⟩] defines or redefines ⟨page-style⟩,; the normal form starts from scratch, while the starred form \pagesetup ∗ 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 LaTeX, not fancyhdr nor interfaces-fancyhdr.

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

9 Interface marks

interfaces-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" LATEX \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⟩}
\markstheccs {⟨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).

\markstheccs {⟨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 \markstheccs suitable to use with \lastsectiontitle *etc.*. at \sectionbreak (see interfaces-hypbmsec p. 9).

\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), *ie.* 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⟩ *ie.* 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 (*ie.* nothing is done).

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

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

\getthemarks \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, *ie.* 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` ⇔ there is at most one section title on the current page;
- `\topmarks =\botmarks` ⇔ there is no section title on the current page;
- `\firstmarks=\topmarks` ⇔ 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 $` (`\usetikz {pgfmath}` required in preamble)
- `$$\FPeval $$` (`\usepackage {fp}` required in preamble) ⇒ 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⟩}{`← number of columns *or* comma separated list of values

text = the text to be inserted (repeated) in each cell
font = 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 `\backslashchar` but you may want `\crcr \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, ..., *p*}.

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

\R \row refer to the value of the list for the current row. \r is the same (unless you defined a formula named r).
\R {⟨*n*⟩} to the value of the list for row {⟨*n*⟩}

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 scaled 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 John Tom

Mother	Father	Children
Nout	Geb	Isis Osiris Seth 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{tabu}{*4c}
\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  = \blueiii,
   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{tabu}
```

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

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

```
\def\weightlist{weight in kg, 30, 45, 50, 55, 60, 65, 70, 80, 90, 95, 100, 110, 120}
\def\heightlist{height in cm, 190, 180, 170, 160, 150, 140, 130}
\colorlet{denutrition}{Crimson} \colorlet{skinniness}{yellow} \colorlet{normal}{LawnGreen}
\colorlet{obesity}{Moccasin} \colorlet{serious obesity}{DarkOrange} \colorlet{morbid obesity}{Fuchsia}
\newcommand*\mycolor[1]{\cellcolor{%
 \ifdim#1pt<17pt denutrition\else \ifdim#1pt<19pt skinniness\else \ifdim#1pt<26pt normal\else
 \ifdim#1pt<30pt obesity\else     \ifdim#1pt<35pt serious obesity\else   morbid obesity\fi\fi\fi\fi\fi}}

\begin{tabu}{*{\countvalues\heightlist}{|c}|} \hline
\repeatcell \heightlist {%
   rows = \weightlist,
   height = \ifnum\column>1 \c\else 1\fi,
   weight = \ifnum\row>1 \r\else 1\fi,
   BMI = {$$round(\weight/((\height/100)^2),1)$$},
   text = \mycolor{\BMI}\BMI,
   text/row1 = \c,      font/row1 = \color{NavyBlue},        cr/row1 = \\ \hline,
   text/col1 = \r,      font/col1 = \color{DarkViolet},
}              \\ \hline
\end{tabu}\quad
\begin{tabu}{|c|}
\repeatcell{denutrition,skinniness,normal,obesity,serious obesity,morbid obesity}{%
      text=\cellcolor{\c}{\c},transpose,font=\large\bfseries\bottopstrut}
\end{tabu}
```

height in cm / weight in kg	190	180	170	160	150	140	130
30	8.3	9.3	10.4	11.7	13.3	15.3	17.8
45	12.5	13.9	15.6	17.6	20.0	23.0	26.6
50	13.9	15.4	17.3	19.5	22.2	25.5	29.6
55	15.2	17.0	19.0	21.5	24.4	28.1	32.5
60	16.6	18.5	20.8	23.4	26.7	30.6	35.5
65	18.0	20.1	22.5	25.4	28.9	33.2	38.5
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

denutrition
skinniness
normal
obesity
serious obesity
morbid obesity

weight in kg / height in cm	30	45	50	55	60	65	70	80	90	95	100	110	120
190	8.3	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	37.0
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	41.5
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	46.9
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	53.3
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	61.2
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	71.0

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,environment,level,*etc.*]{
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,environment,level*,etc.⟩]{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 $\mathcal{AMS}$ \intertext in math formulæ, \interitem allows to put some non intented 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 (*ie.* if ⟨*width*⟩≤ width of ⟨*text*⟩). Example:

truncate: \truncate {⟨*5cm*⟩}{⟨*Hello world!*⟩} → Hello word!
trunctext: \trunctext {⟨*5cm*⟩}{⟨*Hello world!*⟩} → Hello world!

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

\htruncadjust {⟨*total width*⟩}[⟨$x_1, x_2, \ldots, x_n$⟩]{⟨$\texttt{text}_1, \texttt{text}_2, \ldots, \texttt{text}_n$⟩}

This macro will measure the width of $\texttt{text}_1$,$\texttt{text}_2$,...,$\texttt{text}_n$ and adjust them for truncation:

text	width	adusted width	γ (truncated?)	Returned width
text_1	w_1	$w'_i = \min\left(w_1, \frac{x_1}{\sum x_i} \times \langle \textit{total width} \rangle\right)$	$\gamma_1 = \begin{cases} 1 & \text{if } w'_1 < w_1 \\ 0 & \text{otherwise} \end{cases}$	$\omega_1 = w'_1 + \gamma_1 \cdot \Phi \cdot \frac{x_1}{\sum \gamma_i x_i}$
text_2	w_2	$w'_i = \min\left(w_2, \frac{x_2}{\sum x_i} \times \langle \textit{total width} \rangle\right)$	$\gamma_2 = \begin{cases} 1 & \text{if } w'_2 < w_2 \\ 0 & \text{otherwise} \end{cases}$	$\omega_2 = w'_2 + \gamma_2 \cdot \Phi \cdot \frac{x_2}{\sum \gamma_i x_i}$
text_3	w_3	$w'_i = \min\left(w_3, \frac{x_3}{\sum x_i} \times \langle \textit{total width} \rangle\right)$	$\gamma_3 = \begin{cases} 1 & \text{if } w'_3 < w_3 \\ 0 & \text{otherwise} \end{cases}$	$\omega_3 = w'_3 + \gamma_3 \cdot \Phi \cdot \frac{x_3}{\sum \gamma_i x_i}$
text_4	w_4	$w'_i = \min\left(w_4, \frac{x_4}{\sum x_i} \times \langle \textit{total width} \rangle\right)$	$\gamma_4 = \begin{cases} 1 & \text{if } w'_4 < w_4 \\ 0 & \text{otherwise} \end{cases}$	$\omega_4 = w'_4 + \gamma_4 \cdot \Phi \cdot \frac{x_4}{\sum \gamma_i x_i}$
		Φ =freespace=⟨*total width*⟩$- \sum w'_i$		$\sum \omega_i \leqslant \langle \textit{total width} \rangle$

Another example of a tabular made with \repeatcell

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

\trunctext [⟨*TruncateMarker*⟩]{\htruncwidth {⟨*i*⟩}}{⟨$\textit{text}_i$⟩}.

x_i can be any real number provided that $\sum_i x_i \leqslant 16\,383$=\maxdimen in points.

Measuring the widths occur inside a \hbox, thus $\texttt{text}_1$,..., $\texttt{text}_n$ 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 $\{\texttt{text}_1, \ldots, \texttt{text}_n\}$. In other words, $\texttt{text}_1, \ldots, \texttt{text}_n$ 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,      alternatively, the key  chapter  is provided
  title = the appendix title,        if left blank, title is removed: [page] option of appendix
  intoc = true | false,              put an entry in t.o.c. ?
  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 disapear from interfaces-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

/.blank	Replaces blank value by another value.
/.is private	Throws an error if the key is used in an assignment
/.store in cs /.estore in cs	Like /.store in but with \csname...\endcsname
/.true /.false /.on /.off	/.is choice shortcut for boolean keys
/.is multiple choice	Like /.is choice but more than on choice can be selected at a time
/.is enum	/.is choice shortcut for enumerated keys also provides the /key/.number key to get the numeric index of the selected choice.
/.store as code /.estore as code	Stores the given value in the key itself. + and * keys both append code. The same but stores the *expanded value*.
/.store as code in cs /.estore as code in cs	Stores the given value in a cs-name rather than in the key. + and * keys both append code. The same but stores the *expanded value*.
/.store as color /.store as color command	Stores the color in the key itself. The same but stores the color *command*.
/.store as color in cs /.store as color command in cs	Stores the color in a cs-name rather than in the key. The same but stores the color *command*.
/.store as number /.estore as number	Stores an integer in the key (- + and * keys are provided to add, substract and multiply).
/.store as number in cs /.estore as number in cs	The same, but stores into a cs-name rather than in the key.
/.store in counter cs	The same, but stores into a TEX counter.
/.store as glue /.estore as glue	Stores a glue expression in the key (+ - and * keys are provided to add, substract or scale). The same, but stores the *computed value* of the glue, not its expression.
/.store as glue in cs /.estore as glue in cs	The same, but stores in a given cs-name rather than in the key itself.
/.store in skip cs	The same, but stores the glue inside a TEX \skip register.
/.store as dimen /.estore as dimen	Store a dimen expression in the key (with + - and * keys to add, substract or scale). The same, but stores the *computed value* of the dimen, not its expression.
/.store as dimen in cs /.estore as dimen in cs	The same, but stores in a given cs-name rather than in the key itself.
/.store in dimen cs	Stores the dimension into a TEX \dimen register rather than in a macro.
/.alias /.alias*	Creates an alias for the key. The same, but also creates the alias for the +, - and * keys if they exist.

The command \pgfkeysmeaning is provided (with \providecommand): 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 interfaces-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 interfaces-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:

```
color=\color{yellow}        color=\normalcolor
color=blue                  color=[rgb]{1,0,0}
```

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

```
color=yellow                color=default   defined by interfaces if not already
color=blue                  color=[rgb]{1,0,0}      defined \AtBeginDocument
```

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

```
color=\normalcolor          color=\color{yellow}
color=\color{blue}          color=\color[rgb]{1,0,0}
```

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 sourrounded by \glueexpr...\relax... and is stored inside the key.

Furthermore:

the + key adds to the length: \glueexpr old value + ⟨ *argument* ⟩ \relax.
the - key substracts: \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 substract) 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 LaTeX to store the font size (and size+ adds, size- substracts, 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 disapear from interfaces ⌣.

18·1 † New macros provided with \providecommand

\removefrom ⟨*hook*⟩{⟨*code*⟩}	\removefromstart ⟨*hook*⟩{⟨*code*⟩}
\gremovefrom ⟨*hook*⟩{⟨*code*⟩}	\gremovefromstart ⟨*hook*⟩{⟨*code*⟩}
\eremovefrom ⟨*hook*⟩{⟨*code*⟩}	\eremovefromstart ⟨*hook*⟩{⟨*code*⟩}
\xremovefrom ⟨*hook*⟩{⟨*code*⟩}	\xremovefromstart ⟨*hook*⟩{⟨*code*⟩}

\removefrom removes the first occurence 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 occurence 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 ☞ scrlfile

19·1 † Star forms for \BeforeFile and \AfterFile

scrlfile 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 scrlfile.

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*** interfaces-titlesec and interfaces-bookmark are loaded.

20·1 † LaTeX

❶

Patched command	Type	Importance	Module	ref. page
\[ ]@pkgextension \[ ]@clsextension \[ ]@ifpackageloaded \[ ]@ifclassloaded		minor optimisation or correction	interfaces-LaTeX	83

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

```
\c   \c   \c   \c
```

This is because LaTeX defines those commands `\@onlypreamble`, while the equivalent macros in ltxcmds can be used inside `document` as well.

❷

Patched command	Type	Importance	Module	ref. page
\[ ]addcontentsline	*prepend*	important but no side effect	interfaces-titlesec interfaces-bookmark	44

`\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`.

❸

Patched command	Type	Importance	Module	ref. page
\[ ]@input		important but no side effect	interfaces-scrlfile	84

The `\input` primitive (same as LaTeX 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 \backslashcharbookmark

❹

Patched command	Type	Importance	Module	ref. page
\[ ]bookmark	*modif*	important	interfaces-bookmark	46

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 (*ie.* `\aftergroup`) ?

20·3 † tocloft \backslashcharnewlistof

❺

Patched command	Type	Importance	Module	ref. page
\[ ]newlistof		important but no side effect	interfaces-tocloft	

20·4 † colortbl

❻

Patched command	Type	Importance	Module	ref. page
\[ ]CT@cellc	*corr.*	important but no side effect	interfaces-makecell	79

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 16 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@cell@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}%
}
```

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).

20·5 † hypbmsec

Patched command	Type	Importance	Module	ref. page
❼ `\[ ]hbs@do` `\[ ]hbs@process`	*redef*	important but no side effect	interfaces-hypbmsec interfaces-titlesec	49

In order to get `\lastsectiontitle`, `\lastsectionbookmark` and `\lastsectiontoc` updated at the right place (*ie. 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

20·6 † enumitem

Patched command	Type	Importance	Module	ref. page
❽ `\[ ]setlist`	*redef*	minor optimisation or correction	interfaces-enumitem	79

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

20·7 † pgfkeys.code.tex

Patched command	Type	Importance	Module	ref. page
❾ `\[ ]pgfkeys@unpack` `\[ ]pgfkeys@case@three`	*redef*	important	interfaces-pgfkeys	85

`\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    [2011/02/19 v3.1 - pgfkeys interfaces - pgf 2.0 et 2.1 (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\@ptionlist{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    [2011/02/19 v3.1 Interfaces core system layer (FC)]
31 \RequirePackage{etex,ltxcmds,etoolbox,pgfkeys,scrlfile,infwarerr}
32 \AtEndOfPackage{%
33    \RequirePackage{interfaces-etoolbox}%
34    \RequirePackage{interfaces-scrlfile}%
35    \RequirePackage{interfaces-pgfkeys}
36    \RequirePackage{interfaces-tikz}%
37    \RequirePackage{interfaces-umrand}% There is a \BeforePackage here !
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]{\itf@pgfkeys\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 LaTeX's \@ifpackageloaded – this macros 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 Interfaces patches

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

```
67 \AfterPackage{colortbl}{%
68    {\ltx@ifpackageloaded{arydshln}
69       {\@PackageWarningNoLine{interfaces-base}
70          {The package arydshln should be loaded after colortbl
71          \MessageBreak because both redefine \string\@classz}}%
72       {}}%
73 }% 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.

```
74 \newrobustcmd*\itf@preapptocmd[5]{%
75    \pretocmd#1{#2}%
76       {\apptocmd#1{#3}%
77          {#4}%
78          {#5}}%
79       {#5}%
80 }% \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...

```
81 \def\itf@patch{\@makeother\#\futurelet\itf@tp\itf@patch@}
82 \def\itf@patch@{\csname itf@patch@%
83       \ifx\itf@tp\patchcmd inside\else
84       \ifx\itf@tp\itf@preapptocmd inside\else
85       boundary\fi\fi
86    \endcsname
87 }% \itf@patch@
88 \def\itf@patch@boundary#1#2#3#4#5{%
89    \catcode`\#=6%
90    \let\itf@tp#2%
```

```
    #1\itf@tp{#3}%
    {\let#2\itf@tp
     \AtBeginDocument{#4}% in order to keep this info even after \dump
    }
    {#5}%
}% \itf@patch@boundary (for \pretocmd and \apptocmd)
\def\itf@patch@inside#1#2#3#4#5#6{%
    \catcode`\#=6%
    \let\itf@tp#2%
    #1\itf@tp{#3}{#4}%
    {\ifx#1\patchcmd \itf@patch@inside@{#1}{#3}{#4}\fi
     \let#2\itf@tp
     \AtBeginDocument{#5}%
    }
    {#6}%
}% \itf@patch@inside (for \patchcmd)
\def\itf@patch@inside@#1#2#3{%
    \loop
       \let\@tempa \itf@tp
       #1\itf@tp{#2}{#3}{}{}%
       \unless\ifx \@tempa\itf@tp
    \repeat
}% \itf@patch@inside@
```

21.2.2 Helper macros

```
\newskip\itf@sk
\newmuskip\itf@musk
\newtoks\itf@tk
\newcount\itf@cnt
```

`\itf@strip@at` `\itf@strip@dot`

`\itf@strip@at` removes all until `@` while `\itf@strip@dot` removes the fractional part.

```
%%   H E L P E R   M A C R O S
\begingroup\makeatother
    \csgdef{itf@strip@at}#1@{}
\endgroup
\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 \macrototest`

`\macrototest` is expanded once and its first token τ is placed into a temporary macro `\itf@tp`.

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

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

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

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

```
\def\itf@expandonceifcs#1{\expandafter\itf@exp@ndonceifcs\expandafter#1#1Q\@nnil}
\def\itf@exp@ndonceifcs#1#2#3\@nnil{%
    \def\itf@tp{#2}%
    \ifx\itf@tp#1%
    \ifcat\relax\noexpand#2%
       \expandafter\expandafter\expandafter\remove@to@nnil
          \expandafter\ifx\expandafter#2#2\@nnil\else\@nnil\let#1#2\fi
    \fi\fi
}% \itf@exp@ndonceifcs
```

21.2.3 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 LaTeX `\@defaultunits`.

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

```
%%   G E T   A   N U M B E R (if possible)
%% USAGE: \itf@number\count<text>\relax\@nnil (like \@defaultunits)
\def\itf@number#1#2\relax\@nnil{% \relax is to mimick the syntax of \@defaultunits
   \afterassignment\itf@number@#1\number0#2\relax\itf@number@
}
\def\itf@number@#1\relax#2\itf@number@{%
   \ifblank{#1}
      {\itf@number@@{}#2\itf@number@@\@nnil
      \csname ltx@\ifx\@let@token\itf@number@@
         first\else second\fi oftwo\endcsname}
      \ltx@secondoftwo
}% \itf@number@
\def\itf@number@@#1{\futurelet\@let@token\itf@number@@@}
\def\itf@number@@@{%
   \csname \ifx\@let@token\relax itf@number@@%
   \else remove@to@nnil%
   \fi \endcsname
}% \itf@number@@@
```

21.2.4 Units and math units

\itf@setlength To be able to write: `\pgfkeys {key=\widthof{some text} }` (package calc), interfaces-base defines `\itf@setlength`:

```
\protected\def\itf@setlength#1#2{#1\glueexpr#2\relax}
```

\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.

```
%% glue * 1.5 = glue * 98302 / 65536
%% glue * 3/2 = glue * 3/2
\def\itf@units@scale#1!{\itf@units@scale@normalize#1/\@nnil/\@nil}
\def\itf@units@scale@normalize#1/#2/#3\@nil{%
   \ifx#2\@nnil \number\dimexpr#1pt\relax/65536
   \else#1/#2
   \fi
}% \itf@units@scale@normalize
\def\itf@units@scaleNoCalc#1!{\itf@units@scale@normalizeNoCalc#1/\@nnil/\@nil}
\let\itf@units@scale@normalizeNoCalc \itf@units@scale@normalize
```

\itf@setlength@calc The version for the calc package. calc removes stretch and shrink components of glues when a scaling operation is done using `\real` or `\ratio`. This limitation is lifted for `key=value` assignments.

\itf@units@scale@normalize@calc The version of `\itf@units@scale@normalize` when using the calc package.

`\ratio` is used.

```
\protected\def\itf@setlength@calc#1#2{\begingroup
   \let\calc@multiply@by@real \itf@calc@multiply@by@real
   \let\calc@Adimen \itf@calc@Askip  \let\calc@Bdimen \itf@calc@Bskip
   \setlength{#1}{#2}%
   \expandafter\endgroup\expandafter#1\the#1\relax
}% \itf@setlength@calc
\def\itf@units@scale@normalize@calc#1/#2/#3\@nil{%
   \ifx#2\@nnil 1*\ratio{\dimexpr#1pt\relax}\p@
   \else        1*\ratio{\dimexpr#1pt\relax}/{\dimexpr#2pt\relax}%
   \fi
}% \itf@units@scale@normalize@calc
\def\itf@calc@multiply@by@real#1{%
   \calc@Bdimen\glueexpr\calc@B*\number\dimexpr#1pt\relax/65536\relax
```

interfaces [rev.3.1 – release] © 2010 – 2011 FC

```
174    \calc@B\calc@Bdimen
175 }% \itf@calc@multiply@by@real
176 \AfterPackage*{calc}{%
177    \newskip\itf@calc@Askip \newskip\itf@calc@Bskip
178    \let\itf@setlength \itf@setlength@calc
179    \let\itf@units@scale@normalize \itf@units@scale@normalize@calc
180 }% AfterPackage calc
```

`\itf@strip@mu` This is the equivalent of LaTeX's `\strip@pt` but for math units:

```
181 %%   U N I T S   F O R   D I M E N S
182 \def\itf@strip@mu{\expandafter\itf@rem@mu\the}
183 {%
184 \@makeother\M\@makeother\U
185 \lowercase{%
186    \gdef\itf@rem@mu#1.#2MU{#1\ifnum#2>\z@.#2\fi}%
187 }}%
```

`\itf@units@pttomu` 1*mu* is exactly 1*em*/18 where the *em* is taken from `\textfont` 2.

`\itf@units@mutopt` Thus the scaling: `\fontdimen` 6`\textfont` 2 ∗ 100/1800.

```
188 %% \skip = \itf@units@mutopt \muskip
189 \def\itf@units@pttomu#1{\gluetomu\glueexpr
190    \glueexpr#1\relax*1800/%
191       \expandafter\itf@strip@dot\the\dimexpr
192             \fontdimen6\textfont2*100\relax.\@nil
193    \relax
194 }% \itf@units@pttomu
195 \def\itf@units@mutopt#1{\glueexpr
196    \mutoglue\muexpr#1\relax*
197       \expandafter\itf@strip@dot\the\dimexpr
198             \fontdimen6\textfont2*100\relax.\@nil/1800
199    \relax
200 }% \itf@units@mutopt
```

`\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.

```
201 %% \muskip = \itf@units@mu{ \skip or \muskip or number}
202 {%
203 \@makeother\P\@makeother\T\@makeother\S\@makeother\B
204 \@makeother\C\@makeother\M\@makeother\D\@makeother\I\@makeother\N
205 \lowercase{%
206 \gdef\itf@units@mu#1#2{\begingroup
207    \edef\itf@tp{#2}%
208    \@tfor\x:={PT}{pt}{PC}{pc}{IN}{in}{BP}{bp}%
209              {CM}{cm}{MM}{mm}{DD}{dd}{CC}{cc}{SP}{sp}\do{%
210       \@expandtwoargs\in@\x\itf@tp\ifin@\@break@tfor\fi
211    }%
212    \expandafter\endgroup
213    \ifin@
214       #1=\itf@units@pttomu{#2}%
215    \else
216       \@defaultunits#1 #2mu\relax\@nnil
217    \fi
218 }% \itf@units@mu
219 }}
```

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

```
220 %% \skip = \itf@units@pt( \muskip or \skip or number )
221 {%
222 \@makeother\M\@makeother\U
223 \lowercase{%
224 \gdef\itf@units@pt#1#2{\begingroup
225    \@expandtwoargs\in@{MU}{#2}%
226    \ifin@\else\@expandtwoargs\in@{mu}{#2}\fi
```

```
    \expandafter\endgroup
    \ifin@
       #1=\itf@units@mutopt{#2}%
    \else
       \@defaultunits#1 #2pt\relax\@nnil
    \fi
}}}% \itf@units@pt
```

21.2.5 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 xolor, but it works with color).

```
\AtBeginDocument{%
    \ltx@ifpackageloaded{xcolor}
       {\@ifundefinedcolor{default}
          {\colorlet{default}{.}}
          {}}%
       {\ltx@ifpackageloaded{color}
          {\@ifundefined{\string\color @default}
             {\expandafter\def\csname\string\color @default\endcsname{\default@color}}
             {}}%
       {}}%
}
```

```
⟨/base⟩
```

21.3 † Interface LaTeX

```
⟨*LaTeX⟩
\ProvidesPackage{interfaces-LaTeX}
    [2011/02/19 v3.1 pgfkeys macros for LaTeX (FC)]
\RequirePackage{interfaces-base}
\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.

```
\newrobustcmd*\changefont[1]{\itf@pgfkeys
    \pgfqkeys{/itf/LaTeX/changefont}{#1}\selectfont
}% \changefont
\AfterPackage*{hyperref}
    {\pdfstringdefDisableCommands{\let\changefont\@gobble}}
```

```
\pgfqkeys{/itf/LaTeX/changefont}{%
    encoding/.code=\fontencoding{#1},encoding/.value required,%
       enc/.alias=encoding,%
    family/.code=\fontfamily{#1},family/.value required,%
       fam/.alias=family,%
    series/.code=\fontseries{#1},series/.value required,%
       ser/.alias=series,%
```

```
   shape/.code=\fontshape{#1},shape/.value required,%
      sha/.alias=shape,%
   size/.estore as dimen in cs=f@size,%
   size/.append code=\set@fontsize\f@linespread\f@size\f@baselineskip,%
      siz/.alias*=size,%
   baselineskip/.estore as glue in cs=f@baselineskip,%
   baselineskip/.append code=\set@fontsize\f@linespread\f@size\f@baselineskip,%
      skip/.alias*=baselineskip,%
   @linespread/.estore as dimen,%
   @linespread/.append code=
      \pgfkeysgetvalue{/itf/LaTeX/changefont/@linespread}\pgfkeys@temp
      \ifx\pgfkeys@temp\@empty \let\pgfkeys@temp \p@ \fi
      \edef\f@linespread{\expandafter\rem@pt\pgfkeys@temp}%
      \set@fontsize\f@linespread\f@size\f@baselineskip,%
   @linespread/.initial=\p@,%
   linespread/.code=\@defaultunits\itf@sk #1pt\relax\@nnil
                    \pgfkeysalso{/itf/LaTeX/changefont/@linespread=\itf@sk},%
   linespread+/.code=\@defaultunits\itf@sk #1pt\relax\@nnil
                     \pgfkeysalso{/itf/LaTeX/changefont/@linespread+=\itf@sk},%
   linespread-/.code=\@defaultunits\itf@sk #1pt\relax\@nnil
                     \pgfkeysalso{/itf/LaTeX/changefont/@linespread-=\itf@sk},%
   linespread*/.alias=@linespread*,%
      spread/.alias*=linespread,%
}% \pgfkeys definitions for \changefont
\itf@AfterPackage{color}{%
   \pgfkeysifdefined{/itf/LaTeX/changefont/color/.@cmd}{}
      {\pgfkeys{/itf/LaTeX/changefont/color/.code=\color{#1}}}%
}% AfterPackage color
\itf@AfterPackage{xcolor}{%
   \pgfkeysifdefined{/itf/LaTeX/changefont/color/.@cmd}{}
      {\pgfkeys{/itf/LaTeX/changefont/color/.code=\color{#1}}}%
}% AfterPackage xcolor
```

21.3.2 \quickprofile

\quickprofile

```
\newrobustcmd*\quickprofile{\begingroup \afterassignment \itf@quickprofile \count@}
\def\itf@quickprofile{\afterassignment \itf@profileloop \toks@}

\def\itf@profileloop{%
   \edef\itf@N {\the\count@}\let\itf@n \z@
   \edef\itf@time{\the\pdfelapsedtime}%
   \loop
      \message{^^JProfiler: step \number\itf@n}%
      \setbox\z@=\vbox{{\the\toks@}}%
      \count@ \itf@n\advance\count@ \@ne
      \ifnum \count@<\itf@N
         \edef\itf@n{\the\count@}%
   \repeat
   \message{^^J(interfaces) quickprofile: Time elapsed for \itf@N\space cycles:
   \the\numexpr(\pdfelapsedtime-\itf@time-32767)/65536\relax sec
   \the\numexpr\numexpr(\pdfelapsedtime-\itf@time)
      -\numexpr(\pdfelapsedtime-\itf@time-32767)/65536\relax*65536\relax
       *1000/65536\relax ms}%
   \endgroup
}% \itf@profileloop

⟨/LaTeX⟩
```

21.4 Interface TikZ (pgfmanual)

```
315 ⟨*tikz⟩
316 \ProvidesPackage{interfaces-tikz}
317    [2011/02/19 v3.1 load tikz libraries easily (FC)]
318 \RequirePackage{interfaces-base}
319 \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.

```
320 %% Some catcode checking
321 \AfterPackage*{tikz}{%
322    \AtEndPreamble{%
323       \tikzset{every picture/.add style={%
324             /utils/exec={\@makeother\!\@makeother\:}}{}}%
325    }%
326 }%
```

21.4.2 List of pgf/TikZ packages and libraries

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

```
327 \newcommand*\alltikzpackages{%
328    tikz,pgf,pgfcore,pgfcalendar,pgffor,pgfkeys,pgfpages,pgfrcs,xxcolor,%
329    pgfplots,pgfsys,
330    pgfpict2e,fp%%,%           + fp required for fixedpointarithmetic
331 %%   tikzexternal,%% needs special setup
332 %%   pgfmath,% pgfmath should not be loaded twice (\pgfmathdeclarefunction)
333 }% \alltikzpackages
```

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

```
334 \newcommand*\allpgfmodules{datavisualization,%
335 decorations,%
336 matrix,%
337 oo,%
338 parser,%
339 plot,%
340 shapes,%
341 snakes%
342 %%sorting% bug in pgfmodulesorting.code.tex
343 }% \allpgfmodules
```

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

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

```
344 \newcommand*\alltikzlibraries{3d,%
345 arrows,%
346 automata,%
347 backgrounds,%
348 calc,%
349 calendar,%
350 chains,%
351 circuits,%
352 circuits.ee,%
353 circuits.ee.IEC,%
354 circuits.logic,%
355 circuits.logic.CDH,%
356 circuits.logic.IEC,%
357 circuits.logic.US,%
```

```
datavisualization,%
datavisualization.3d,%
datavisualization.barcharts,%
datavisualization.formats.functions,%
datavisualization.polar,%
datavisualization.sparklines,%
decorations,%
decorations.footprints,%
decorations.fractals,%
decorations.markings,%
decorations.pathmorphing,%
decorations.pathreplacing,%
decorations.shapes,%
decorations.text,%
er,%
%%external,% needs special setup
fadings,%
fit,%
fixedpointarithmetic,%
folding,%
fpu,%
graphs,%
graphs.basic,%
intersections,%
lindenmayersystems,%
matrix,%
mindmap,%
patterns,%
petri,%
plothandlers,%
plotmarks,%
positioning,%
scopes,%
shadings,%
shadows,%
shapes,%
shapes.arrows,%
shapes.callouts,%
shapes.gates.logic.IEC,%
shapes.gates.logic.US,%
shapes.geometric,%
shapes.misc,%
shapes.multipart,%
shapes.symbols,%
snakes,%
spy,%
svg.path,%
through,%
topaths,%
trees,%
turtle%
}% \alltikzlibraries
```

21.4.3 pgfkeys definitions for \usetikz

```
\pgfqkeys{/itf/tikz}{%
   basic/.code={%
      \usetikzlibrary{calc,%          for coordinate calculations
                      arrows,%        for arrows
                      backgrounds,%   for framed
                      scopes,%        for scopes and shortcut : { [scope] ... }
                      shapes,%        for ellipse shapes of nodes
      }%
   },%
```

```
419    basic/.value forbidden,%   \alltikzpackages
420    base/.alias=basic,%
421    all/.code={%
422       \expandafter\RequirePackage\expandafter{\alltikzpackages}%
423       \expandafter\usepgfmodule\expandafter{\allpgfmodules}% see pgfcorescopes.code.tex
424       \expandafter\usetikzlibrary\expandafter{\alltikzlibraries}% from:  tikz.code.tex
425    },%
426    .unknown/.code=\itf@usetikzcode\pgfkeyscurrentname
427 }% \pgfkeys for \usetikz
```

\usetikz

```
428 \newrobustcmd*\usetikz[1]{%
429    \RequirePackage{tikz}%
430    \ifblank{#1}
431       {\pgfqkeys{/itf/tikz}{all}}
432       {\pgfqkeys{/itf/tikz}{#1}}%
433    \itf@usetikzsetup
434 }% \usetikz
```

\itf@usetikzsetup

```
435 \def\itf@usetikzsetup{\itf@pgfkeys
436    \pgfkeysifdefined{/tikz/shorten>}{}{%
437       \pgfkeys{/tikz/shorten>/.alias=tikz/shorten >}}%
438    \pgfkeysifdefined{/tikz/shorten<}{}{%
439       \pgfkeys{/tikz/shorten</.alias=tikz/shorten <}}%
440    \pgfkeysifdefined{/tikz/shorten <>}{}{%
441       \pgfkeys{/tikz/shorten <>/.style={/tikz/shorten >={##1},/tikz/shorten<={##1}}}}%
442    \pgfkeysifdefined{/tikz/shorten<>}{}{%
443       \pgfkeys{/tikz/shorten<>/.alias=tikz/shorten <>}}%
444 }%
```

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

```
445 \newrobustcmd*\itf@usetikzcode[1]{\begingroup
446    \edef\x{%
447       \noexpand\in@{,#1,}{,\alltikzpackages,}%
448       \noexpand\ifin@  \noexpand\usepackage{#1}%
449       \noexpand\else
450          \noexpand\in@{,#1,}{,\allpgfmodules,}%
451          \noexpand\ifin@ \noexpand\usepgfmodule{#1}%
452          \noexpand\else  \noexpand\usetikzlibrary{#1}% \usetikzlibrary by default
453          \noexpand\fi
454       \noexpand\fi
455    }\expandafter\endgroup\x
456 }% \itf@usetikzcode
```

21.4.4 \papergraduate

\papergraduate

```
457 \newrobustcmd*\papergraduate[1][x=1cm,y=1cm]{%
458    \ifpgfpicture  \expandafter \itf@papergraduate
459    \else          \expandafter \itf@wallpapergraduate
460    \fi{#1}%
461 }% \papergraduate
462 \pgfqkeys{/itf/tikz/papergraduate}{%
463    xcolor/.store as color,%
464       xcolor/.default=magenta,%
465    ycolor/.store as color,%
466       ycolor/.default=cyan,%
467    color/.style={xcolor={#1},ycolor={#1}},%
468    opacity/.initial=.25,opacity/.default=.25,opacity/.blank=.25,%
469    x/.initial=1cm,x/.default=1cm,%
470    y/.initial=1cm,y/.default=1cm,%
```

```
   unit/.style={x={#1},y={#1}},%
      units/.alias=unit,xy/.alias=unit,%
   xrule/.true=\pgfkeyslet{/itf/tikz/papergraduate/hasHrule}\@firstofone,%
   xrule/.false=\pgfkeyslet{/itf/tikz/papergraduate/hasHrule}\@gobble,%
   xrule/on/.alias=xrule/true,xrule/off/.alias=xrule/false,%
      Hrule/.alias=xrule,%
   xrule/font/.store as code,%
      xrule/font/.default=\tiny,%
      Hrule/font/.alias=xrule/font,%
   yrule/.true=\pgfkeyslet{/itf/tikz/papergraduate/hasVrule}\@firstofone,%
   yrule/.false=\pgfkeyslet{/itf/tikz/papergraduate/hasVrule}\@gobble,%
   yrule/on/.alias=yrule/true,yrule/off/.alias=yrule/false,%
      Vrule/.alias=yrule,%
   yrule/font/.store as code,%
      yrule/font/.default=\tiny,%
      Vrule/font/.alias=yrule/font,%
   font/.style={xrule/font={#1},yrule/font={#1}},%
      rule/font/.alias=font,%
   text opacity/.initial=.8,%
      text opacity/.default=.8,text opacity/.blank=.8,%
   norule/.style={xrule=false,yrule=false},%
      norules/.alias=norule,%
   @reset/.style={font,xrule,yrule,color,unit,opacity},%
}% keys for \papergraduate options
\def\itf@graduation@vert[#1]#2#3#4#5{%
   \node at (0,0) [{inner sep=0pt,outer sep=0pt,anchor=south west,
                    color=\pgfkeysvalueof{/itf/tikz/papergraduate/ycolor},#1}] {%
      \hbox to#2{\leaders
            \hbox to\dimexpr\pgf@yy/#4{\hss\vrule height#3 depth\z@ width#5}\hss}}}
\def\itf@graduation@horiz[#1]#2#3#4#5{
   \node at (0,0) [{inner sep=0pt,outer sep=0pt,anchor=north west,yscale=-1,
                    color=\pgfkeysvalueof{/itf/tikz/papergraduate/xcolor},#1}] {%
      \rlap{\vbox to#3{\leaders \vbox to\dimexpr\pgf@xx/#4{%
                  \kern-\dimexpr#5/2\hrule width#2 depth0pt height#5}\vss}}}}
\def\itf@wallpapergraduate #1{%
   \tikz[{remember picture,overlay}]{%
      \pgfqkeys{/itf/tikz/papergraduate}{@reset,#1}%
      \begin{scope}[{shift=(current page.south west),
                    x=\pgfkeysvalueof{/itf/tikz/papergraduate/x},%
                    y=\pgfkeysvalueof{/itf/tikz/papergraduate/y},%
                    text opacity=\pgfkeysvalueof{/itf/tikz/papergraduate/opacity}}]%
      \itf@paper@graduate \paperwidth \paperheight
      \end{scope}}%
}% \itf@wallpapergraduate
\def\itf@papergraduate #1#2;{%
   \begin{scope}[every node/.style={}]%
      \pgfqkeys{/itf/tikz/papergraduate}{@reset,#1}%
      \coordinate (itf@papergraduate) at #2;
      \@tempdima \pgf@x             \@tempdimb \pgf@y
      \pgfpointanchor {itf@papergraduate}{center}
      \advance\@tempdima -\pgf@x
            \ifdim\@tempdima<\z@ \@tempdima \m@ne\@tempdima \fi
      \advance\@tempdimb -\pgf@y
            \ifdim\@tempdimb<\z@ \@tempdimb \m@ne\@tempdimb \fi
      \edef\itf@tp{%
         \noexpand\begin{scope}[{shift={(\the\pgf@x,\the\pgf@y)},%
                    x=\pgfkeysvalueof{/itf/tikz/papergraduate/x},%
                    y=\pgfkeysvalueof{/itf/tikz/papergraduate/y},%
                    text opacity=\pgfkeysvalueof{/itf/tikz/papergraduate/opacity}}]%
            \noexpand\itf@paper@graduate {\the \@tempdima}{\the \@tempdimb}%
         \noexpand\end{scope}%
      }\itf@tp
   \end{scope}%
}% \paper@graduate
\def\itf@paper@graduate #1#2{\hfuzz\maxdimen\vfuzz\hfuzz\hbadness\@M\vbadness\hbadness
```

```
   \itf@graduation@horiz [text opacity/.expanded={\tikz@textopacity/2}] {#1}{#2}{10}{.1pt};%
   \itf@graduation@horiz []{#1}{#2}{2}{.1pt};% opacity=.25
   \itf@graduation@horiz []{#1}{#2}{1}{.2pt};
   \pgfkeysvalueof{/itf/tikz/papergraduate/hasVrule}{%
      \itf@graduation@horiz [black,nearly opaque] {1mm}{#2}{10}{.1pt};% opacity=.75
      \itf@graduation@horiz [black,nearly opaque] {1.5mm}{#2}{2}{.1pt};
      \itf@graduation@horiz [black,opaque] {2mm}{#2}{1}{.1pt};
      \begin{scope}[inner sep=0pt,outer sep=0pt,%
                    text opacity=\pgfkeysvalueof{/itf/tikz/papergraduate/text opacity},%
                    font=\pgfkeysvalueof{/itf/tikz/papergraduate/yrule/font}]%
        \begingroup
        \let\itf@tp \@empty \dimen@\z@  \count@\z@
        \@whiledim \dimen@<#2\do{%
            \edef\itf@tp{\itf@tp (3mm,\the\dimen@) node {\the\count@}}%
            \advance\count@ \@ne \dimen@ \count@\pgf@xx
        }\expandafter\endgroup\expandafter \path \itf@tp;
      \end{scope}}%
   \itf@graduation@vert [text opacity/.expanded={\tikz@textopacity/2}] {#1}{#2}{10}{.1pt};
   \itf@graduation@vert [] {#1}{#2}{2}{.1pt};
   \itf@graduation@vert [] {#1}{#2}{1}{.2pt};
   \pgfkeysvalueof{/itf/tikz/papergraduate/hasHrule}{%
      \itf@graduation@vert [black,nearly opaque] {#1}{1mm}{10}{.1pt};
      \itf@graduation@vert [black,nearly opaque] {#1}{1.5mm}{2}{.1pt};
      \itf@graduation@vert [black,opaque] {#1}{2mm}{1}{.1pt};
      \begin{scope}[inner sep=0pt,outer sep=0pt,%
                    text opacity=\pgfkeysvalueof{/itf/tikz/papergraduate/text opacity},%
                    font=\pgfkeysvalueof{/itf/tikz/papergraduate/xrule/font}]%
        \begingroup
        \let\itf@tp \@empty \dimen@\z@  \count@\z@
        \@whiledim \dimen@<#1\do{%
            \edef\itf@tp{\itf@tp (\the\dimen@,3mm) node {\the\count@}}%
            \advance\count@ \@ne \dimen@ \count@\pgf@xx
        }\expandafter\endgroup\expandafter \path \itf@tp;
      \end{scope}}%
}% \itf@paper@graduate

⟨/tikz⟩
```

21.5 † Interface ☞ titlesec : \sectionformat

```
⟨*titlesec⟩
\ProvidesPackage{interfaces-titlesec}
   [2011/02/19 v3.1 pgfkeys macros for titlesec (FC)]
\RequirePackage{interfaces-base}
\RequirePackage{auxhook}% <fix for \ttlp@append (odd/even pages)>
\RequirePackage{gettitlestring}
\itf@Check@Package{titlesec}
```

21.5.1 titlesec modifications

```
%%   t i t l e s e c   "p a t c h e s"
\robustify\titleclass   \robustify\titleformat  \robustify\titlespacing
\AddLineBeginMainAux{%
   \string\providecommand\string\ttlp@append[2]{}%
}
\BeforeFile*{ttlkeys.def}{%
   \expandafter\edef\csname itf@ttlkeys.def\endcsname{%
         \catcode32 \the\catcode32\relax
         \catcode37 \the\catcode37\relax
         \endlinechar\the\endlinechar\relax}%
   \catcode37 14\relax     % percent=comment (inside .dtx files...)
   \catcode32 9\relax      % ignore spaces
   \endlinechar\m@ne       % and line feeds
}
\AfterFile*{ttlkeys.def}{\csname itf@ttlkeys.def\endcsname}%
```

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

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

21.5.2 \sectionformat

\sectionformat \sectionformat \subsection * [⟨*shape*⟩]{⟨*key=value*⟩}

```
\newrobustcmd*\sectionformat[1]{\@ifstar
   {\itf@sectionformat{#1}{/*}}
   {\itf@sectionformat{#1}{}}%
}% \sectionformat
\def\itf@sectionformat#1#2{\@testopt
   {\expandafter\expandafter\expandafter%
      \itf@sectionf@rmat\expandafter\@gobble\string#1\@nil{#2}}{}%
}% \sectionformat
\def\itf@sectionf@rmat#1\@nil#2[#3]#4{\itf@pgfkeys\ifblank{#3}
   {\pgfqkeys{/itf/titlesec/#1#2}
      {/itf/titlesec/@setup={#1}{#2},#4,/itf/titlesec/@update={#1}{#2}}}
   {\pgfqkeys{/itf/titlesec/#1#2}
      {/itf/titlesec/@setup={#1}{#2},#4,shape={#3},/itf/titlesec/@update={#1}{#2}}}%
}% \itf@ttl@sectionformat
```

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

```
%% private keys @setup and @update
\pgfqkeys{/itf/titlesec}{%
   @setup/.code 2 args=\itf@ttl@setup{#1}{#2},%
   @update/.code 2 args=\expandafter\itf@ttl@update
                   \csname#1\endcsname{/itf/titlesec/#1}{#2}%
}
\newrobustcmd*\itf@ttl@setup[2]{%
   \pgfkeysifdefined{/itf/titlesec/#1#2/shape}{}
      {\itf@ttl@newsection{#1}{#2}}%
   \ifcsundef{ttls@#1#2}{}% no previous spacing settings
      {\expandafter\expandafter\expandafter%
       \itf@ttl@getspacing\csname ttls@#1#2\endcsname{/itf/titlesec/#1#2}}%
   \ifcsundef{ttlf@#1#2}{}% no previous format settings
      {\ifttl@explicit
       \expandafter\expandafter\expandafter%
       \itf@ttl@getformat\csname ttlf@#1#2\endcsname{}{/itf/titlesec/#1#2}%
       \else
       \expandafter\expandafter\expandafter%
       \itf@ttl@getformat\csname ttlf@#1#2\endcsname{/itf/titlesec/#1#2}%
       \fi}%
}% \itf@ttl@setup
\def\itf@ttl@setkey#1#2{\begingroup
   \def\x{\pgfkeysvalueof{#1}}\def\y{#2}%
   \expandafter\endgroup\ifx\x\y\else
      \pgfkeyssetvalue{#1}{#2}\fi
}% \itf@ttl@setkey
\def\itf@ttl@getspacing#1#2#3#4#5#6{%
   \itf@ttl@setkey{#6/left}{#1}%
   \itf@ttl@setkey{#6/right}{#2}%
   \itf@ttl@setkey{#6/top}{#3}%
   \itf@ttl@setkey{#6/bottom}{#4}%
   \itf@ttl@setkey{#6/indent first}{#5}%
}% \itf@ttl@getspacing
\def\itf@ttl@getformat#1#2{%
```

```
   \csname ltx@\ifx\pgfkeysvalueof#1first\else second\fi oftwo\endcsname
      {\itf@ttl@get@format{}}
      {\itf@ttl@get@format{#1}{#2}}%
}% \itf@ttl@getformat
\def\itf@ttl@get@format#1#2#3#4#5#6#7{%
   \if\relax\detokenize{#1}\relax\else
   \pgfkeysEsetvalue{#7/shape}{\expandafter\itf@strip@at\string#1}%
   \fi
   \itf@ttl@setkey{#7/font}{#2}%
   \itf@ttl@setkey{#7/label}{#3}%
   \itf@ttl@setkey{#7/sep}{#4}%
   \itf@ttl@setkey{#7/before}{#5}%
   \itf@ttl@setkey{#7/after}{#6}%
}% \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).

```
\newrobustcmd*\itf@ttl@update[3]{%
   \ifblank{#3}
      {\ttl@getkeys{#1}{titlesec}}
      {\ttl@getkeys{name=#1,numberless}{titlesec}}%
   \pgfkeysgetvalue{#2#3/shape}\itf@tp
   \ifcsundef{ttlh@\itf@tp}
      {\begingroup \makeatletter
      \InputIfFileExists{\itf@tp.tss}{}{%
      \PackageError{titlesec}{Unknown shape}%
         {Shapes are defined in files with extension tss\MessageBreak
         Either you have misspelled the shape\MessageBreak
         or there is no a \itf@tp.tss file}}%
      \endgroup}
      {}%
   \ifttl@explicit \begingroup
      \pgfkeysgetvalue{#2#3/before}\pgfkeys@temp
      \toks@\expandafter{\pgfkeys@temp}%
      \edef\x{\endgroup\def\noexpand\itf@tp####1{\the\toks@}}%
      \x \pgfkeyslet{#2#3/before@cmd}\itf@tp
   \@temptokena{\csdef{ttlf@\ttl@a}##1}%
   \the\@temptokena{%
      \pgfkeysvalueof{#2#3/shape@cs}%
      {\pgfkeysvalueof{#2#3/font}}%
      {\pgfkeysvalueof{#2#3/label}}%
      {\pgfkeysvalueof{#2#3/sep}}%
      {\pgfkeysvalueof{#2#3/before@cmd}{##1}}%
      {\pgfkeysvalueof{#2#3/after}}}%
   \else\@temptokena{\csdef{ttlf@\ttl@a}}%
   \the\@temptokena{%
      \pgfkeysvalueof{#2#3/shape@cs}%
      {\pgfkeysvalueof{#2#3/font}}%
      {\pgfkeysvalueof{#2#3/label}}%
      {\pgfkeysvalueof{#2#3/sep}}%
      {\pgfkeysvalueof{#2#3/before}}%
      {\pgfkeysvalueof{#2#3/after}}}%
   \fi
   \csname ttl@compat\ttl@a\endcsname
   \ttl@spacing@ii
      {\pgfkeysvalueof{#2#3/indent first}}%
      {\pgfkeysvalueof{#2#3/left}}%
      {\pgfkeysvalueof{#2#3/top}}%
      {\pgfkeysvalueof{#2#3/bottom}}%
      [\pgfkeysvalueof{#2#3/right}]%
}% \itf@ttl@update
```

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

- change the class of an existing sectionning command;

or:

- create a new sectionning command.

```
%%-------------------------------------------------------------------------
%%   t i t l e c l a s s
\newrobustcmd*\itf@ttl@titleclass{\@ifstar
   {\itf@ttl@titleclass@i*}
   {\itf@ttl@titleclass@i{}}%
}% \itf@ttl@titleclass
\def\itf@ttl@titleclass@i#1#2#3[#4]#5\@nil{\ifblank{#4}
   {%
      \expandafter\titleclass\csname#2\endcsname{#3}%
   }
   {%
      \expandafter\titleclass\csname#2\endcsname{#3}[{#4}]% #4 = sup-level
      \if\relax#1\relax % not starred
         \expandafter\expandafter\expandafter%
            \itf@ttl@titleclass@ii\expandafter\@gobble\string#4\relax{#2}% \@addtoreset...
      \fi
   }%
   \expandafter\providecommand\csname l@#2\endcsname[2]{}% no entry in toc
}% \itf@ttl@titleclass@i
\def\itf@ttl@titleclass@ii#1\relax#2{%
   \ifcsundef{c@#2}
      {\newcounter{#2}[{#1}]}% creates counter for #1
      {\@addtoreset{#2}{#1}}%
   \csxdef{the#2}{%
      \expandafter\noexpand\csname the#1\endcsname
      .\noexpand\@arabic\expandafter\noexpand\csname c@#2\endcsname
   }% \the#2
   \ifcsundef{l@#1}{}{%
      \expandafter\providecommand\csname l@#2\endcsname[2]{%
         \csname l@#1\endcsname{##1}{##2}%
      }% \l@#2 = \l@newsection is (by default) the same as \l@sup-level
   }%
}% \itf@ttl@titleclass@ii
```

`\itf@ttl@createsection` If `\sectionformat` is invoked with an unknown sectionning command (*ie.* 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.

```
%%-------------------------------------------------------------------------
%%   C r e a t i n g   n e w   s e c t i o n s
\def\itf@ttl@createsection#1{% sectionning command undefined: temporarily defined
   \expandafter\titleclass\csname#1\endcsname{straight}[*]%     in straight class
   \itf@AfterPackage{hypbmsec}{%
      \AfterPreamble{%
         \csletcs{hbs@#1}{#1}%
         \csxdef{#1}{\noexpand\hbs@do\expandafter\noexpand\csname hbs@#1\endcsname}%
      }%
   }%
   \itf@AfterPackage{interfaces-tocloft}{%
      \itf@cft@newsection{toc}{#1}%
   }%
   \itf@AfterPackage{interfaces-hypbmsec}{%
      \expandafter\let\csname last#1title\endcsname\relax
      \expandafter\let\csname last#1bookmark\endcsname\relax
      \expandafter\let\csname last#1toc\endcsname\relax
   }%
}% \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.

```
%%-------------------------------------------------------------------------------
%%   D e f i n i n g   k e y s   f o r   e a c h   s e c t i o n
\def\itf@ttl@newsection#1#2{% #1=section, #2=/* or empty
   \ifcsundef{#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
         {\pgfkeysgetvalue{/itf/titlesec/#1/shape}\itf@tp}%     sectionning command
         {\def\itf@tp{hang}}%
      \pgfkeyslet{/itf/titlesec/#1#2/shape}\itf@tp%
      }%
   \pgfqkeys{/itf/titlesec/#1#2}{%
      shape/.value required,%
      shape@cs/.initial=
         \csname ttlh@\pgfkeysvalueof{/itf/titlesec/#1#2/shape}\endcsname,% constant
         shape@cs/.is private=interfaces-titlesec,% constant
      font/.store as code,%
         format/.alias*=font,%
      label/.store as code,%
      sep/.estore as glue,%
         labelsep/.alias*=sep,%
      before/.store as code,%
         before@cmd/.is private=interfaces-titlesec,%
      after/.store as code,%
      indent first/.true=\pgfkeyssetvalue{/itf/titlesec/#1#2/indent first}{\@ne},%
      indent first/.false=\pgfkeyssetvalue{/itf/titlesec/#1#2/indent first}{\z@},%
         identfirst/.alias=indent first,%
         indent first=true,%
      left/.estore as glue,%
      top/.estore as glue,%
      bottom/.estore as glue,%
      right/.estore as glue,%
      break/.code=\ifblank{##1}
                     {\cslet{#1break}\@empty}
                     {\protected\csdef{#1break}{##1}},%
         break*/.code=\protected\csappto{#1break}{##1},%
         break+/.alias=break*,%
      mark/.code=\ifblank{##1}
                  {\cslet{#1mark}\@gobble}
                  {\protected\long\csdef{#1mark}####1{##1}},%
         mark/.default=,%
   }% \pgfkeys
   \ifblank{#2}{% no default marks for stared (numberless) \section*
   \itf@AfterPackage{interfaces-marks}{% requires interfaces-marks
      \pgfkeys{/itf/titlesec/#1/mark/.default=\marksthe{#1}{##1}}%
   }% AfterPackage interfaces-mark
   \itf@AfterPackage{interfaces-bookmark}{% requires interfaces-bookmark
   \pgfqkeys{/itf/titlesec/#1}{% does not exist for starred sections
```

```
816       bookmark/.is multiple choice,%
817       bookmark/level/.estore in cs=toclevel@#1,% depth of the bookmark
818          bookmark/level/.default=\ifcsvoid{ttll@#1}{99}{\csuse{ttll@#1}},%
819          bookmark/level/.blank=\ifcsvoid{toclevel@#1}
820             {\ifcsvoid{ttll@#1}{99}{\csuse{ttll@#1}}}{\csuse{toclevel@#1}},%
821          bookmark/toclevel/.alias=bookmark/level,%
822       bookmark/bold/.code=\ifblank{##1}
823          {\pgfkeyslet{/itf/titlesec/#1/bookmark/bold}\@empty}
824          {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/bold}{bold=##1,}},%
825          bookmark/bold/.default=true,%
826       bookmark/bold*/.code=\ifblank{##1}
827          {\pgfkeyslet{/itf/titlesec/#1/bookmark/bold*}\@empty}
828          {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/bold*}{bold*=##1,}},%
829          bookmark/bold*/.default=true,%
830       bookmark/italic/.code=\ifblank{##1}
831          {\pgfkeyslet{/itf/titlesec/#1/bookmark/italic}\@empty}
832          {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/italic}{italic=##1,}},%
833          bookmark/italic/.default=true,%
834       bookmark/italic*/.code=\ifblank{##1}
835          {\pgfkeyslet{/itf/titlesec/#1/bookmark/italic*}\@empty}
836          {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/italic}{italic*=##1,}},%
837          bookmark/italic*/.default=true,%
838       bookmark/color/.code=\ifblank{##1}
839          {\pgfkeyslet{/itf/titlesec/#1/bookmark/color}\@empty}
840          {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/color}{color=##1,}},%
841          bookmark/color/.default=,%
842       bookmark/color*/.code=\ifblank{##1}
843          {\pgfkeyslet{/itf/titlesec/#1/bookmark/color*}\@empty}
844          {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/color*}{color*=##1,}},%
845          bookmark/color*/.default=,%
846       bookmark/on/.code=\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/on}{disable=false,},%
847          bookmark/on/.value forbidden,%
848       bookmark/off/.code=\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/on}{disable=true,},%
849          bookmark/off/.value forbidden,%
850          bookmark/none/.alias=bookmark/off,%
851       bookmark/on*/.code=\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/on*}{disable*=false,},%
852       bookmark/off*/.code=\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/on*}{disable*=true,},%
853          bookmark/none*/.alias=bookmark/off*,%
854          bookmark/disable*/.alias=bookmark/off*,%
855       bookmark/style/.code=\ifblank{##1}
856             {\pgfkeyslet{/itf/titlesec/#1/bookmark/style}\@empty}
857             {\pgfkeyssetvalue{/itf/titlesec/#1/bookmark/style}{style=##1,}},%
858          bookmark/style/.default=,%
859       bookmark/.unknown/.code=\pgfkeysEsetvalue{/itf/titlesec/#1/bookmark/other}
860                                                {\pgfkeyscurrentname={##1}},%
861       bookmark/bold/.initial=,%
862       bookmark/bold*/.initial=,%
863       bookmark/italic/.initial=,%
864       bookmark/italic*/.initial=,%
865       bookmark/color/.initial=,%
866       bookmark/color*/.initial=,%
867       bookmark/on/.initial=,%
868       bookmark/on*/.initial=,%
869       bookmark/style/.initial=,%
870    }}% \AfterPackage*{interfaces-bookmark}
871    }% not starred (numberless) \section
872    {}% starred/numberless \section*: do not create the keys
873 }% \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.

```
874 %% bookmarks styles for sectionning commands:
875 \@makeother\#
```

```
\itf@AfterPackage{interfaces-bookmark}{%
   \itf@patch\itf@preapptocmd\addcontentsline              % #2=section name in
      {\begingroup\itf@ttl@BKM{/itf/titlesec/#2/bookmark}}%   \addcontentsline
      {\endgroup}
      {\@PackageInfoNoLine{interfaces-titlesec}
         {\string\addcontentsline\space successfully patched!}}
      {\@PackageWarningNoLine{interfaces-titlesec}
         {Patch of \string\addcontentsline\space failed
         \MessageBreak bookmark-style specs for sections
         \MessageBreak will be unavailable}}%
}% AfterPackage interfaces-bookmark
\catcode`\#=6
\def\itf@ttl@BKM#1{%
   \pgfkeysifdefined{#1/.@cmd}
      {%
      \edef\itf@tp{% do nothing if the keys are not set (shortcut)
         \pgfkeysvalueof{#1/bold}%
         \pgfkeysvalueof{#1/bold*}%
         \pgfkeysvalueof{#1/italic}%
         \pgfkeysvalueof{#1/italic*}%
         \pgfkeysvalueof{#1/color}%
         \pgfkeysvalueof{#1/color*}%
         \pgfkeysvalueof{#1/on}%
         \pgfkeysvalueof{#1/on*}%
         \pgfkeysvalueof{#1/style}}%
      \ifx\itf@tp\@empty
      \else
         \global\pgfkeyslet{#1/bold*}\@empty
         \global\pgfkeyslet{#1/italic*}\@empty
         \global\pgfkeyslet{#1/color*}\@empty
         \global\pgfkeyslet{#1/on*}\@empty
         \expandafter\bookmarksetup\expandafter{\itf@tp}%
         \pgfkeysifdefined{/itf/bookmark/*}%
            {% \bookmarksetup{color*=} overwrites \sectionformat...{bookmark/color*=}
            \pgfkeysgetvalue{/itf/bookmark/*}\itf@tp
            \expandafter\bookmarksetup\expandafter{\itf@tp}%
            }
            {}%
      \fi}
      {}%
}% \itf@ttl@BKM
```

21.5.4 \bottomtitles

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

```
%%-------------------------------------------------------------------------------
%%   b o t t o m t i t l e s
\newrobustcmd*\bottomtitles{\@ifnextchar\bgroup
   \itf@setbottomtitlespace
   {\afterassignment\itf@set@bottomtitle@space\itf@sk}%
}% \bottomtitles
\def\itf@setbottomtitlespace#1{%
   \@defaultunits\itf@sk#1\textheight\relax\@nnil
   \itf@set@bottomtitle@space
}% \itf@setbottomtitlespace
\def\itf@set@bottomtitle@space{\xdef\bottomtitlespace{\the\dimexpr\itf@sk}}
```

⟨/titlesec⟩

21.6 Interface hyperref

```
929 ⟨*hyperref⟩
930 \ProvidesPackage{interfaces-hyperref}
931    [2011/02/19 v3.1 provides raised hyperdef (FC)]
932 \RequirePackage{interfaces-base}
933 \itf@Check@Package{hyperref}
```

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

```
934 \newrobustcmd\raisedhyperdef[4][]{\begingroup
935    \ifblank{#1}
936       {}
937       {%
938       \expandafter\def\expandafter\HyperRaiseLinkHook\expandafter{%
939          \expandafter\def\expandafter\HyperRaiseLinkHook
940             \expandafter{\HyperRaiseLinkHook}% restore current definition
941          \HyperRaiseLinkHook
942          \advance\noexpand\HyperRaiseLinkLength by\dimexpr#1\relax\relax}%
943       }%
944    \ifx \\#2\\\def \Hy@AnchorName {#3}\else
945       \def \Hy@AnchorName {#2.#3}%
946    \fi
947    \ltx@leavevmode
948    \Hy@raisedlink{\hyper@anchorstart{\Hy@AnchorName}\hyper@anchorend}%
949    \endgroup
950    #4%
951 }% \raisedhyperdef
```

```
952 ⟨/hyperref⟩
```

21.7 Interface bookmark

```
953 ⟨*bookmark⟩
954 \ProvidesPackage{interfaces-bookmark}
955    [2011/02/19 v3.1 more control on bookmarks (FC)]
956 \RequirePackage{interfaces-base}
957 \RequirePackage{interfaces-hyperref}
958 \RequirePackage{refcount}
959 \itf@Check@Package{bookmark}
```

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

```
960 \expandafter\itf@patch\expandafter\patchcmd\csname\string\bookmark\endcsname
961    {\immediate\write\@mainaux}{\itf@BKM@write}
962    {\@PackageInfoNoLine{interfaces-bookmark}
963       {\expandafter\string\csname\string\bookmark\endcsname\space
964       successfully patched!}}
965    {\@PackageWarningNoLine{interfaces-bookmark}
966       {Command \expandafter\string\csname\string\bookmark\endcsname\space
967       could not be patched\MessageBreak
968       Loading of interfaces-bookmark is canceled}%
969       \endinput}
```

21.7.1 star keys* definitions

```
970 \global\let\itf@BKM@enable\@ne % 0 = disable*, 1=enable, \@M = disable
971 \pgfqkeys{/itf/bookmark}{%
972    disable/.true=\global\let\itf@BKM@enable\@M,%
973    disable/.false=\global\let\itf@BKM@enable\@ne,%
974    disable*/.true=\global\let\itf@BKM@enable\z@,%
975    disable*/.false=\global\let\itf@BKM@enable\@ne,%
976    atend/.true=\ifnum\itf@BKM@enable>0\edef\itf@BKM@enable{\number-\itf@BKM@enable}\fi,%
977    atend/.false=\ifnum\itf@BKM@enable<0\edef\itf@BKM@enable{\number-\itf@BKM@enable}\fi,%
978    bold*/.true=\pgfqkeys{/itf/bookmark}{@save={bold=true}},%
```

```
bold*/.false=\pgfqkeys{/itf/bookmark}{@save={bold=false}},%
bold*/@blank/.code=\pgfqkeys{/itf/bookmark/@restore}{bold},%
bold*/.blank=@blank,%
italic*/.true=\pgfqkeys{/itf/bookmark}{@save={italic=true}},%
italic*/.false=\pgfkeys{/itf/bookmark}{@save={italic=false}},%
italic*/@blank/.code=\pgfqkeys{/itf/bookmark/@restore}{italic},%
italic*/.blank=@blank,%
color*/.code={\ifblank{#1}
   {\pgfqkeys{/itf/bookmark/@restore}{color}}
   {\pgfqkeys{/itf/bookmark}{@save={color={#1}}}}%
},%
@save/.code={%
   \pgfkeysifdefined{/itf/bookmark/@save/color}{}
      {\pgfkeyslet{/itf/bookmark/@save/color}\BKM@color}%
   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}{}
      {\pgfkeyslet{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}%
   \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}{}
      {\pgfkeysEsetvalue{/itf/bookmark/@save/grouplevel}{\the\currentgrouplevel}}%
   \pgfkeysaddvalue{/itf/bookmark/*}{}{,#1}%
   \bookmarksetup{#1}%
},%
@restore/color/.code=%
   \pgfkeysifdefined{/itf/bookmark/@save/color}
      {\pgfkeysgetvalue{/itf/bookmark/@save/color}\BKM@color}
      {},%
@restore/FontStyle/.code=%
   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}
      {\pgfkeysgetvalue{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}
      {},%
@restore/.code={%
   \pgfkeysifdefined{/itf/bookmark/@save/color}
      {\pgfkeysgetvalue{/itf/bookmark/@save/color}\BKM@color}
      {}%
   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}
      {\pgfkeysgetvalue{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}
      {}%
   \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}
      {% shortcut: \bookmarksetup{bold*} called inside main group (level 0)
      \ifnum\pgfkeysvalueof{/itf/bookmark/@save/grouplevel}=\z@
         \global\pgfkeyslet{/itf/bookmark/@save/FontStyle}\@undefined
         \global\pgfkeyslet{/itf/bookmark/@save/color}\@undefined
         \global\pgfkeyslet{/itf/bookmark/@save/grouplevel}\@undefined
         \global\pgfkeyslet{/itf/bookmark/*}\@undefined
         \global\let\BKM@color\BKM@color
         \global\let\BS@BKM@FontStyle\BS@BKM@FontStyle
      \else % restore after each group as needed
         \pgfkeyslet{/itf/bookmark/@save/FontStyle}\@undefined
         \pgfkeyslet{/itf/bookmark/@save/color}\@undefined
         \pgfkeyslet{/itf/bookmark/*}\@undefined
         \ifnum\currentgrouplevel>\z@
            \aftergroup\itf@BKM@restore
         \else
            \pgfkeyslet{/itf/bookmark/@save/grouplevel}\@undefined
      \fi\fi
      }
      {}%
},%
@restore/bold/.code={% bold is "hidden" in \BS@BKM@FontStyle
   \begingroup
      \edef\itf@tp{\bookmarkget{bold}}%
      \pgfqkeys{/itf/bookmark/@restore}{FontStyle}%
      \count@=\bookmarkget{bold}%
      \edef\itf@tp{\endgroup
         \ifnum\itf@tp=\count@
         \else \noexpand\bookmarksetup{%
```

```
                        bold\ifcase\count@ =false\fi}\fi
        }\itf@tp},%
   @restore/italic/.code={% italic is "hidden" in \BS@BKM@FontStyle
      \begingroup
         \edef\itf@tp{\bookmarkget{italic}}%
         \pgfqkeys{/itf/bookmark/@restore}{FontStyle}%
         \count@=\bookmarkget{italic}%
         \edef\itf@tp{\endgroup
            \ifnum\itf@tp=\count@
            \else \noexpand\bookmarksetup{%
                        italic\ifcase\count@ =false\fi}\fi
         }\itf@tp},%
}
\def\itf@BKM@restore{%
   \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}
      {\pgfkeysalso{/itf/bookmark/@restore}}
      {}%
}% \itf@BKM@restore
%% Plug the BKM keys in the interfaces pgfkeys (not efficient but quickly written...)
\define@key{BKM}{disable}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/disable={#1}}}
\define@key{BKM}{disable*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/disable*={#1}}}
\define@key{BKM}{bold*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/bold*={#1}}}
\define@key{BKM}{italic*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/italic*={#1}}}
\define@key{BKM}{color*}[]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/color*={#1}}}
\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.

```
\def\itf@BKM@write#1{%
   \aftergroup\itf@BKM@restore
   \ifcase\itf@BKM@enable
      \global\let\itf@BKM@enable\@ne
   \or
      \immediate\write\@mainaux{#1}%
   \else
      \ifcase -\itf@BKM@enable  % (case -0 = 0 tested before)
      \or                       % (case -1 = enable but At End)
         \let\itf@BKM@enable\@ne
         \edef\itf@tp{\immediate\write\@mainaux{#1}}%
         \expandafter\BookmarkAtEnd\expandafter{\itf@tp}%
      \fi
   \fi
}% \itf@BKM@write
```

21.7.2 ref and pageref keys

\itf@BKM@pageref

```
%% pageref=  key for \bookmark (using refcount : \getpagerefnumber)
\def\itf@BKM@pageref[#1]{%
   \expandafter\itf@BKM@@pageref
      \csname r@#1\endcsname{#1}%
}% \itf@BKM@pageref
\def\itf@BKM@@pageref#1#2{%
   \ifx#1\relax
      \protect\G@refundefinedtrue
      \@latex@warning{%
         Hyper reference `#2' on page \thepage \space undefined
         \MessageBreak for bookmark destination page
       }%
   \fi
   \edef\BKM@page{\getrefbykeydefault{#2}{page}{1}}%
}% \itf@BKM@@pageref
\define@key{BKM}{pageref}{%
```

```
1100    \Hy@babelnormalise\itf@BKM@pageref[{#1}]}
```

\itf@BKM@ref

```
1101 %% ref=  key for \bookmark
1102 \def\itf@BKM@ref[#1]{%
1103    \expandafter\itf@BKM@@ref
1104       \csname r@#1\endcsname{#1}%
1105 }% \itf@BKM@ref
1106 \def\itf@BKM@@ref#1#2{%
1107    \ifx#1\relax
1108       \protect\G@refundefinedtrue
1109       \@latex@warning{%
1110          Hyper reference `#2' on page \thepage \space undefined
1111          \MessageBreak for bookmark destination
1112        }%
1113       \def\BKM@dest{??}%
1114    \else
1115       \edef\BKM@dest{\expandafter\@fourthoffive#1\@empty\@empty}%
1116    \fi
1117 }% \BKM@@ref
1118 \define@key{BKM}{ref}{%
1119    \Hy@babelnormalise\itf@BKM@ref[{#1}]}
```

1120 ⟨/bookmark⟩

21.8 † Interface ☞ hypbmsec

21.8.1 interfaces-hypbmsec

```
1121 ⟨*hypbmsec⟩
1122 \ProvidesPackage{interfaces-hypbmsec}
1123    [2011/02/19 v3.1 lastsection,title,anchor, etc. (FC)]
1124 \RequirePackage{interfaces-base}
1125 \RequirePackage{gettitlestring}
1126 \itf@Check@Package{hypbmsec}
```

\hbs@do (patch)

```
1127 \def\itf@hbs@do#1{%
1128    \xdef\itf@hbs@currentname{\expandafter\itf@strip@at\string#1}%
1129    \let\hbs@tocstring\relax % <for starred sections>
1130    \let\hbs@bmstring\relax  % <for starred sections>
1131    \@ifstar
1132       {\itf@hbs@ssect#1}%
1133       {\let\hbs@seccmd=#1\hbs@checkarg}%
1134 }% \itf@hbs@do
1135 \let\hbs@do\itf@hbs@do
```

\hbs@process (patch)

```
1136 \itf@patch\pretocmd\hbs@process{%
1137    \itf@hbs@process{#1}%
1138    }%
1139    {\@PackageInfoNoLine{interfaces-hypbmsec}
1140       {\string\hbs@process\space successfully patched}}
1141    {\@PackageWarningNoLine{interfaces-hypbmsec}
1142       {Command \string\hbs@process\space could not be patched
1143       \MessageBreak loading of `interfaces-hypbmsec` aborted
1144       \MessageBreak \string\lastsection\space will not work}%
1145       \endinput}%
```

\itf@hbs@ssect For starred sections:

```
1146 \long\def\itf@hbs@ssect#1#2{% starred section
1147    \itf@Not@titlesec#1
1148       {\expandafter\itf@hbs@last@starred\expandafter{\itf@hbs@currentname}{#2}}
1149       {\let\itf@hbs@last\itf@hbs@last@starred@ttl}% <expanded at \ttl@finmarks>
```

```
1150    #1*{#2}%
1151 }% \itf@hbs@ssect
```

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

```
1152 \long\def\itf@hbs@process#1{% not starred
1153    \itf@Not@titlesec \hbs@seccmd
1154       {%
1155       \ifdefined\hyper@anchor
1156          \expandafter\itf@hbs@last@nostar@nottl@Hy\expandafter{\itf@hbs@currentname}{#1}%
1157       \else
1158          \expandafter\itf@hbs@last@nostar@nottl\expandafter{\itf@hbs@currentname}{#1}%
1159       \fi
1160       }%
1161       {\let\itf@hbs@last \itf@hbs@last@nostar@ttl}% <expanded at \ttl@finmarks>
1162 }% \itf@hbs@process
```

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

```
1163 \long\def\itf@hbs@last@starred#1#2{% <expanded immediately>
1164    \GetTitleString{#2}\let\itf@hbs@currenttitle\GetTitleStringResult
1165    \begingroup
1166       \let\@elt \itf@resetlastsections
1167       \globaldefs \@ne
1168       \expandafter\let\csname last#1title\endcsname\itf@hbs@currenttitle
1169       \expandafter\let\csname last#1toc\endcsname\@empty
1170       \expandafter\let\csname last#1bookmark\endcsname\@empty
1171       \expandafter\let\csname last#1anchor\endcsname\relax
1172       \let\lastsectionname \itf@hbs@currentname
1173       \csname cl@#1\endcsname
1174    \endgroup
1175 }% \itf@hbs@last@starred
1176 \def\itf@hbs@last@starred@ttl{% <expanded at \ttl@finmarks>
1177    \global\let\itf@hbs@last \@empty
1178    \expandafter\itf@hbs@last@starred
1179       \expandafter\itf@hbs@currentname \expandafter{\ttl@savetitle}%
1180 }% \itf@hbs@last@starred@ttl
```

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

```
1181 \long\def\itf@hbs@last@nostar#1#2{%
1182    \GetTitleString{#2}\let\itf@hbs@currenttitle\GetTitleStringResult
1183    \begingroup
1184       \let\@elt \itf@resetlastsections
1185       \globaldefs \@ne
1186       \expandafter\let\csname last#1title\endcsname\itf@hbs@currenttitle
1187       \expandafter\let\csname last#1toc\expandafter\endcsname
1188          \csname \ifx\hbs@tocstring\relax
1189                itf@hbs@currenttitle\else hbs@tocstring\fi \endcsname
1190       \expandafter\let\csname last#1bookmark\expandafter\endcsname
1191          \csname \ifx\hbs@bmstring\relax
1192                              last#1toc\else hbs@bmstring\fi \endcsname
1193       \expandafter\let\csname last#1anchor\endcsname\HyperLocalCurrentHref
1194       \let\lastsectionname \itf@hbs@currentname
1195       \csname cl@#1\endcsname
1196    \endgroup
1197 }% \itf@hbs@last@starred
1198 \def\itf@hbs@last@nostar@ttl{% <expanded at \ttl@finmarks>
1199    \global\let\itf@hbs@last \@empty
1200    \expandafter\itf@hbs@last@nostar
1201          \expandafter\itf@hbs@currentname \expandafter{\ttl@savetitle}%
1202 }% \itf@hbs@last@nostar@ttl
1203 \long\def\itf@hbs@last@nostar@nottl#1#2{% <expanded at \cl@section>
1204    \expandafter\let\expandafter\itf@hbs@cl@ORI\csname cl@#1\endcsname
1205    \expandafter\def\csname cl@#1\endcsname{%
1206       \expandafter\let\csname cl@#1\endcsname\itf@hbs@cl@ORI
1207       \itf@hbs@cl@ORI
```

```
1208      \itf@hbs@last@nostar {#1}{#2}}%
1209 }% \itf@hbs@last@nostar@nottl
1210 \long\def\itf@hbs@last@nostar@nottl@Hy#1#2{% <expanded at \hyper@anchorend>
1211    \begingroup
1212    \toks@\expandafter{%
1213       \expandafter\def\expandafter\hyper@anchorend
1214                       \expandafter{\hyper@anchorend}%
1215       \itf@hbs@last@nostar{#1}{#2}}%
1216    \edef\x{\endgroup
1217       \def\noexpand\hyper@anchorend{\the\toks@}%
1218    }\x
1219 }% \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`.

```
1220 \def\itf@Not@titlesec#1{\@firstoftwo}
1221 \AfterPackage*{titlesec}{%
1222 \def\itf@Not@titlesec#1{\begingroup
1223    \@onelevel@sanitize#1%
1224    \edef\@tempa{\noexpand\in@
1225       {\noexpand\@nil \string\ttl@}
1226       {\noexpand\@nil #1}%
1227    }\@tempa
1228    \expandafter\endgroup
1229    \ifin@ \expandafter\@secondoftwo
1230    \else  \expandafter\@firstoftwo
1231    \fi
1232 }% \itf@Not@titlesec
1233 }% AfterPackage titlesec
```

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

```
1234 \AfterPackage*{titlesec}{%
1235 \expandafter\def\expandafter\ttl@finmarks\expandafter{%
1236    \expandafter\itf@hbs@last \ttl@finmarks}%
1237 \let\itf@hbs@last \@empty
1238 }% AfterPackage
```

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

```
1239 \def\itf@resetlastsections#1{%
1240    \expandafter\let\csname last#1title\endcsname\relax
1241    \expandafter\let\csname last#1toc\endcsname\relax
1242    \expandafter\let\csname last#1bookmark\endcsname\relax
1243    \expandafter\let\csname last#1anchor\endcsname\relax
1244    \csname cl@#1\endcsname
1245 }% \itf@resetlastsections

1246 \let\lastsectionname\relax
1247 \@for\itf@tp:=part,section,subsection,subsubsection,paragraph,subparagraph%
1248   \do{\expandafter\let\csname last\itf@tp title\endcsname\relax
1249       \expandafter\let\csname last\itf@tp toc\endcsname\relax
1250       \expandafter\let\csname last\itf@tp bookmark\endcsname\relax
1251       \expandafter\let\csname last\itf@tp anchor\endcsname\relax
1252    }%
1253 \AtBeginDocument{\ifundef\chapter{}
1254    {\let\lastchaptertitle\relax
1255     \let\lastchaptertoc\relax
1256     \let\lastchapterbookmark\relax
1257     \let\lastchapteranchor\relax}%
1258 }%

1259 ⟨/hypbmsec⟩
```

21.9 Interface fancyhdr : \pagesetup

```
⟨*fancyhdr⟩
\ProvidesPackage{interfaces-fancyhdr}
   [2011/02/19 v3.1 pgfkeys macros for fancyhdr (FC)]
\RequirePackage{interfaces-base}
\itf@Check@Package{fancyhdr}
\robustify\fancyhf
\robustify\fancyhfoffset
```

21.9.1 \pagesetup

\pagesetup

```
\newrobustcmd*\pagesetup{%
   \let\fancy@gbl\relax % Just in case...
   \@ifstar
      {\itf@pagesetup{}}
      {\itf@pagesetup{reset,}}%
}% \pagesetup
\def\itf@pagesetup#1{\@testopt
   {\itf@p@gesetup{#1}}{}%
}% \itf@pagesetup
\def\itf@p@gesetup#1[#2]#3{\ifblank{#2}
   {% modifies the current page style
      \itf@pgfkeys\pgfqkeys{/itf/fancyhdr}{#1#3}\relax\ps@@fancy}%
   {% defines or modifies a given page style
      \ifblank{#1}
         \csappto% star form: keep existing value (if not overwritten)
         \csdef% no star form: overwrite (+ reset at \pagestyle time)
         {ps@#2}{\itf@pgfkeys\pgfqkeys{/itf/fancyhdr}{#1#3}\relax\ps@@fancy}%
   }%
}% \itf@p@gesetup
\pgfqkeys{/itf/pagesetup}{%
   @current/.is private=interfaces-fancyhdr,%
   @style/.is private=interfaces-fancyhdr,%
}
```

\pagestyle

```
\renewrobustcmd*\pagestyle[1]{\ifcsundef{ps@#1}
   {\itf@undefinedpagestyle{#1}}
   {\csname ps@#1\endcsname}%
}% \pagestyle
```

\thispagestyle

```
\renewrobustcmd*\thispagestyle[1]{\ifcsundef{ps@#1}
   {\itf@undefinedpagestyle{#1}}
   {\global\@specialpagetrue\gdef\@specialstyle{#1}}%
}% \thispagestyle
\newcommand*\itf@undefinedpagestyle[1]{%
   \@latex@error{Undefined page style: #1
   \MessageBreak your command will be ignored}\@eha
}% \itf@undefinedpagestyle
```

21.9.2 Keys for \pagesetup

```
\pgfkeys{%
   /handlers/.fancy@hf/.code=%
      \edef\itf@tp{\pgfkeyscurrentpath}%
      \pgfkeysalso{\pgfkeyscurrentpath/.store as code}%
      \pgfkeysalso{\pgfkeyscurrentpath/.append code/.expanded=%
         \csdef{f@ncy#1}{%
            \noexpand\pgfkeysvalueof{\itf@tp/font}
            \noexpand\pgfkeysvalueof{\itf@tp}\noexpand\strut}},%
```

```
}% handler for fancyhdr interface
\pgfqkeys{/itf/fancyhdr}{% keys for \pagesetup
   code/.code={#1},% execution at expansion of \ps@... => \pgfqkeys{...,code={...},...}
   pagestyle/.style={code=\pagestyle{#1}},%
      page style/.alias=pagestyle,%
      load style/.alias=pagestyle,%
   head/rule/.store as dimen in cs=headrulewidth,%
   head/rule/.default=.4pt,%
   head/rule/.blank=\z@,%
      head/rulewidth/.alias*=head/rule,%
      headrulewidth/.alias*=head/rule,%
      head/rule/width/.alias*=head/rule,%
   head/rule/font/.store as code,%
   head/rule/color/.style={head/rule/font+=\color{#1}},%
   headruler/.code=%
      \let\headrule\pgfkeyscurrentvalue
      \ifx\headrule\@empty\else
         \preto\headrule{\bgroup\pgfkeysvalueof{/itf/fancyhdr/head/rule/font}}%
         \appto\headrule{\egroup}%
      \fi,%
      headruler/.default=%
         \if@fancyplain\let\headrulewidth\plainheadrulewidth\fi
         \hrule\@height\headrulewidth \@width\headwidth
         \vskip-\headrulewidth\relax,%
      headrule/.alias=headruler,%
      headrule,% sets default
   foot/rule/.store as dimen in cs=footrulewidth,%
      foot/rule/.default=.4pt,%
      foot/rule/.blank=\z@,%
      foot/rulewidth/.alias*=foot/rule,%
      footrulewidth/.alias*=foot/rule,%
      foot/rule/width/.alias*=foot/rule,%
   foot/rule/font/.store as code,%
   foot/rule/color/.style={foot/rule/font+=\color{#1}},%
   footruler/.code=%
      \let\footrule\pgfkeyscurrentvalue
      \ifx\footrule\@empty\else
         \preto\footrule{\bgroup\pgfkeysvalueof{/itf/fancyhdr/head/rule/font}}%
         \appto\footrule{\egroup}
      \fi,%
      footruler/.default=%
         \if@fancyplain\let\footrulewidth\plainfootrulewidth\fi
         \vskip-2\footrulewidth
         \hrule\@height\footrulewidth \@width\headwidth\vskip\footrulewidth,%
      footrule/.alias=footruler,%
      footrule,% sets default
   rule/.style={head/rule={#1},foot/rule={#1}},%
   rule+/.style={head/rule+={#1},foot/rule+={#1}},%
   rule-/.style={head/rule-={#1},foot/rule-={#1}},%
   rule*/.style={head/rule*={#1},foot/rule*={#1}},%
      rules/.alias*=rule,rulewidth/.alias*=rule,%
      rule/width/.alias*=rule,rules/width/.alias*=rule,%
   norule/.style={rule=\z@},%
   norule/.value forbidden,%
      norules/.alias=norule,%
   rule/font/.style={head/rule/font={#1},foot/rule/font={#1}},%
   rule/font+/.style={head/rule/font+={#1},foot/rule/font+={#1}},%
      rule/font*/.alias=rule/font+,%
      rules/font/.alias=rule/font,
      rules/font+/.alias=rule/font+,%
      rules/font*/.alias=rule/font+,%
   rule/color/.style={head/rule/color={#1},foot/rule/color={#1}},%
      rules/color/.alias=rule/color,%
   foot/rule/skip/.estore as glue in cs=footruleskip,%
      foot/rule/skip/.default=.3\normalbaselineskip,%
```

```
1375      foot/rule/skip/.blank=\z@,%
1376      foot/ruleskip/.alias*=foot/rule/skip,%
1377      footruleskip/.alias*=foot/rule/skip,%
1378    font/.style={head/font={#1},foot/font={#1}},%
1379      font+/.style={head/font+={#1},foot/font+={#1}},%
1380      font*/.alias=font+,%
1381    color/.style={head/color={#1},foot/color={#1},%
1382                  head/rule/color={#1},foot/rule/color={#1}},%
1383    head/.style={head/left={#1},head/center={#1},head/right={#1}},%
1384    head+/.style={head/left+={#1},head/center+={#1},head/right+={#1}},
1385    head*/.alias=head+,%
1386      head/font/.style={head/left/font={#1},head/center/font={#1},head/right/font={#1}},%
1387      head/font+/.style={head/left/font+={#1},head/center/font+={#1},head/right/font+={#1}},%
1388      head/font*/.alias=head/font+,%
1389      head/color/.style={head/left/color={#1},head/center/color={#1},head/right/color={#1},%
1390                         head/rule/color={#1}},%
1391    nohead/.style={head=,head/font=,head/rule=,head/rule/font=},
1392    foot/.style={foot/left={#1},foot/center={#1},foot/right={#1}},%
1393    foot+/.style={foot/left+={#1},foot/center+={#1},foot/right+={#1}},
1394    foot*/.alias=foot+,%
1395      foot/font/.style={foot/left/font={#1},foot/center/font={#1},foot/right/font={#1}},%
1396      foot/font+/.style={foot/left/font+={#1},foot/center/font+={#1},foot/right/font+={#1}},%
1397      foot/font*/.alias=foot/font+,%
1398      foot/color/.style={foot/left/color={#1},foot/center/color={#1},foot/right/color={#1},%
1399                         foot/rule/color={#1}},%
1400    nofoot/.style={foot=,foot/font=,foot/rule=,foot/rule/font=},
1401    left/.style={head/left={#1},foot/left={#1}},%
1402    left+/.style={head/left+={#1},foot/left+={#1}},%
1403    left*/.alias=left+,%
1404      left/font/.style={head/left/font={#1},foot/left/font={#1}},%
1405      left/font+/.style={head/left/font+={#1},foot/left/font+={#1}},%
1406      left/font*/.alias=left/font+,%
1407      left/color/.style={head/left/color={#1},foot/left/color={#1}},%
1408    center/.style={head/center={#1},foot/center={#1}},%
1409    center+/.style={head/center+={#1},foot/center+={#1}},%
1410    center*/.alias=center+,%
1411      center/font/.style={head/center/font={#1},foot/center/font={#1}},%
1412      center/font+/.style={head/center/font+={#1},foot/center/font+={#1}},%
1413      center/font*/.alias=center/font+,%
1414      center/color/.style={head/center/color={#1},foot/center/color={#1}},%
1415    right/.style={head/right={#1},foot/right={#1}},%
1416    right+/.style={head/right+={#1},foot/right+={#1}},%
1417    right*/.alias=right+,%
1418      right/font/.style={head/right/font={#1},foot/right/font={#1}},%
1419      right/font+/.style={head/right/font+={#1},foot/right/font+={#1}},%
1420      right/font*/.alias=right/font+,%
1421      right/color/.style={head/right/color={#1},foot/right/color={#1}},%
1422    head/left/.style={head/left/even={#1},head/left/odd={#1}},%
1423    head/left+/.style={head/left/even+={#1},head/left/odd+={#1}},%
1424    head/left*/.alias=head/left+,%
1425      head/left/font/.style={head/left/even/font={#1},head/left/odd/font={#1}},%
1426      head/left/font+/.style={head/left/even/font+={#1},head/left/odd/font+={#1}},%
1427      head/left/font*/.alias=head/left/font+,%
1428      head/left/color/.style={head/left/even/color={#1},head/left/odd/color={#1}},%
1429         left/head/.alias*=head/left,%
1430         left/head/font/.alias*=head/left/font,%
1431         left/head/color/.alias=head/left/color,%
1432    head/center/.style={head/center/even={#1},head/center/odd={#1}},%
1433    head/center+/.style={head/center/even+={#1},head/center/odd+={#1}},%
1434    head/center*/.alias=head/center+,%
1435      head/center/font/.style={head/center/even/font={#1},head/center/odd/font={#1}},%
1436      head/center/font+/.style={head/center/even/font+={#1},head/center/odd/font+={#1}},%
1437      head/center/font*/.alias=head/center/font+,%
1438      head/center/color/.style={head/center/even/color={#1},head/center/odd/color={#1}},%
1439         center/head/.alias*=head/center,%
```

```
1440        center/head/font/.alias*=head/center/font,%
1441        center/head/color/.alias=head/center/color,%
1442    head/right/.style={head/right/even={#1},head/right/odd={#1}},%
1443    head/right+/.style={head/right/even+={#1},head/right/odd+={#1}},%
1444    head/right*/.alias=head/right+,%
1445       head/right/font/.style={head/right/even/font={#1},head/right/odd/font={#1}},%
1446       head/right/font+/.style={head/right/even/font+={#1},head/right/odd/font+={#1}},%
1447       head/right/font*/.alias=head/right/font+,%
1448       head/right/color/.style={head/right/even/color={#1},head/right/odd/color={#1}},%
1449          right/head/.alias*=head/right,%
1450          right/head/font/.alias*=head/right/font,%
1451          right/head/color/.alias=head/right/color,%
1452    foot/left/.style={foot/left/even={#1},foot/left/odd={#1}},%
1453    foot/left+/.style={foot/left/even+={#1},foot/left/odd+={#1}},%
1454    foot/left*/.alias=foot/left+,%
1455       foot/left/font/.style={foot/left/even/font={#1},foot/left/odd/font={#1}},%
1456       foot/left/font+/.style={foot/left/even/font+={#1},foot/left/odd/font+={#1}},%
1457       foot/left/font*/.alias=foot/left/font+,%
1458       foot/left/color/.style={foot/left/even/color={#1},foot/left/odd/color={#1}},%
1459          left/foot/.alias*=foot/left,%
1460          left/foot/font/.alias*=foot/left/font,%
1461          left/foot/color/.alias=foot/left/color,%
1462    foot/center/.style={foot/center/even={#1},foot/center/odd={#1}},%
1463    foot/center+/.style={foot/center/even+={#1},foot/center/odd+={#1}},%
1464    foot/center*/.alias=foot/center,%
1465       foot/center/font/.style={foot/center/even/font={#1},foot/center/odd/font={#1}},%
1466       foot/center/font+/.style={foot/center/even/font+={#1},foot/center/odd/font+={#1}},%
1467       foot/center/font*/.alias=foot/center/font+,%
1468       foot/center/color/.style={foot/center/even/color={#1},foot/center/odd/color={#1}},%
1469          center/foot/.alias*=foot/center,%
1470          center/foot/font/.alias*=foot/center/font,%
1471          center/foot/color/.alias=foot/center/color,%
1472    foot/right/.style={foot/right/even={#1},foot/right/odd={#1}},%
1473    foot/right+/.style={foot/right/even+={#1},foot/right/odd+={#1}},%
1474    foot/right*/.alias=foot/right+,%
1475       foot/right/font/.style={foot/right/even/font={#1},foot/right/odd/font={#1}},%
1476       foot/right/font+/.style={foot/right/even/font+={#1},foot/right/odd/font+={#1}},%
1477       foot/right/font*/.alias=foot/right/font+,%
1478       foot/right/color/.style={foot/right/even/color={#1},foot/right/odd/color={#1}},%
1479          right/foot/.alias*=foot/right,%
1480          right/foot/font/.alias*=foot/right/font,%
1481          right/foot/color/.alias=foot/right/color,%
1482    head/left/odd/.fancy@hf=olh,%
1483    head/left/odd/font/.store as code,%
1484    head/left/odd/color/.style={head/left/odd/font+=\color{#1}},%
1485          head/odd/left/.alias*=head/left/odd,%
1486          odd/head/left/.alias*=head/left/odd,%
1487          odd/left/head/.alias*=head/left/odd,%
1488          left/odd/head/.alias*=head/left/odd,%
1489          left/head/odd/.alias*=head/left/odd,%
1490          head/odd/left/font/.alias*=head/left/odd/font,%
1491          odd/head/left/font/.alias*=head/left/odd/font,%
1492          odd/left/head/font/.alias*=head/left/odd/font,%
1493          left/odd/head/font/.alias*=head/left/odd/font,%
1494          left/head/odd/font/.alias*=head/left/odd/font,%
1495          head/odd/left/color/.alias=head/left/odd/color,%
1496          odd/head/left/color/.alias=head/left/odd/color,%
1497          odd/left/head/color/.alias=head/left/odd/color,%
1498          left/odd/head/color/.alias=head/left/odd/color,%
1499          left/head/odd/color/.alias=head/left/odd/color,%
1500    head/center/odd/.fancy@hf=och,%
1501    head/center/odd/font/.store as code,%
1502    head/center/odd/color/.style={head/center/odd/font+=\color{#1}},%
1503          head/odd/center/.alias*=head/center/odd,%
1504          odd/head/center/.alias*=head/center/odd,%
```

```
        odd/center/head/.alias*=head/center/odd,%
        center/odd/head/.alias*=head/center/odd,%
        center/head/odd/.alias*=head/center/odd,%
        head/odd/center/font/.alias*=head/center/odd/font,%
        odd/head/center/font/.alias*=head/center/odd/font,%
        odd/center/head/font/.alias*=head/center/odd/font,%
        center/odd/head/font/.alias*=head/center/odd/font,%
        center/head/odd/font/.alias*=head/center/odd/font,%
        head/odd/center/color/.alias=head/center/odd/color,%
        odd/head/center/color/.alias=head/center/odd/color,%
        odd/center/head/color/.alias=head/center/odd/color,%
        center/odd/head/color/.alias=head/center/odd/color,%
        center/head/odd/color/.alias=head/center/odd/color,%
  head/right/odd/.fancy@hf=orh,%
  head/right/odd/font/.store as code,%
  head/right/odd/color/.style={head/right/odd/font+=\color{#1}},%
        head/odd/right/.alias*=head/right/odd,%
        odd/head/right/.alias*=head/right/odd,%
        odd/right/head/.alias*=head/right/odd,%
        right/odd/head/.alias*=head/right/odd,%
        right/head/odd/.alias*=head/right/odd,%
        head/odd/right/font/.alias*=head/right/odd/font,%
        odd/head/right/font/.alias*=head/right/odd/font,%
        odd/right/head/font/.alias*=head/right/odd/font,%
        right/odd/head/font/.alias*=head/right/odd/font,%
        right/head/odd/font/.alias*=head/right/odd/font,%
        head/odd/right/color/.alias=head/right/odd/color,%
        odd/head/right/color/.alias=head/right/odd/color,%
        odd/right/head/color/.alias=head/right/odd/color,%
        right/odd/head/color/.alias=head/right/odd/color,%
        right/head/odd/color/.alias=head/right/odd/color,%
  head/left/even/.fancy@hf=elh,%
  head/left/even/font/.store as code,%
  head/left/even/color/.style={head/left/even/font+=\color{#1}},%
        head/even/left/.alias*=head/left/even,%
        even/head/left/.alias*=head/left/even,%
        even/left/head/.alias*=head/left/even,%
        left/even/head/.alias*=head/left/even,%
        left/head/even/.alias*=head/left/even,%
        head/even/left/font/.alias*=head/left/even/font,%
        even/head/left/font/.alias*=head/left/even/font,%
        even/left/head/font/.alias*=head/left/even/font,%
        left/even/head/font/.alias*=head/left/even/font,%
        left/head/even/font/.alias*=head/left/even/font,%
        head/even/left/color/.alias=head/left/even/color,%
        even/head/left/color/.alias=head/left/even/color,%
        even/left/head/color/.alias=head/left/even/color,%
        left/even/head/color/.alias=head/left/even/color,%
        left/head/even/color/.alias=head/left/even/color,%
  head/center/even/.fancy@hf=ech,%
  head/center/even/font/.store as code,%
  head/center/even/color/.style={head/center/even/font+=\color{#1}},%
        head/even/center/.alias*=head/center/even,%
        even/head/center/.alias*=head/center/even,%
        even/center/head/.alias*=head/center/even,%
        center/even/head/.alias*=head/center/even,%
        center/head/even/.alias*=head/center/even,%
        head/even/center/font/.alias*=head/center/even/font,%
        even/head/center/font/.alias*=head/center/even/font,%
        even/center/head/font/.alias*=head/center/even/font,%
        center/even/head/font/.alias*=head/center/even/font,%
        center/head/even/font/.alias*=head/center/even/font,%
        head/even/center/color/.alias=head/center/even/color,%
        even/head/center/color/.alias=head/center/even/color,%
        even/center/head/color/.alias=head/center/even/color,%
```

```
      center/even/head/color/.alias=head/center/even/color,%
      center/head/even/color/.alias=head/center/even/color,%
head/right/even/.fancy@hf=erh,%
head/right/even/font/.store as code,%
head/right/even/color/.style={head/right/even/font+=\color{#1}},%
      head/even/right/.alias*=head/right/even,%
      even/head/right/.alias*=head/right/even,%
      even/right/head/.alias*=head/right/even,%
      right/even/head/.alias*=head/right/even,%
      right/head/even/.alias*=head/right/even,%
      head/even/right/font/.alias*=head/right/even/font,%
      even/head/right/font/.alias*=head/right/even/font,%
      even/right/head/font/.alias*=head/right/even/font,%
      right/even/head/font/.alias*=head/right/even/font,%
      right/head/even/font/.alias*=head/right/even/font,%
      head/even/right/color/.alias=head/right/even/color,%
      even/head/right/color/.alias=head/right/even/color,%
      even/right/head/color/.alias=head/right/even/color,%
      right/even/head/color/.alias=head/right/even/color,%
      right/head/even/color/.alias=head/right/even/color,%
foot/left/odd/.fancy@hf=olf,%
foot/left/odd/font/.store as code,%
foot/left/odd/color/.style={foot/left/odd/font+=\color{#1}},%
      foot/odd/left/.alias*=foot/left/odd,%
      odd/foot/left/.alias*=foot/left/odd,%
      odd/left/foot/.alias*=foot/left/odd,%
      left/odd/foot/.alias*=foot/left/odd,%
      left/foot/odd/.alias*=foot/left/odd,%
      foot/odd/left/font/.alias*=foot/left/odd/font,%
      odd/foot/left/font/.alias*=foot/left/odd/font,%
      odd/left/foot/font/.alias*=foot/left/odd/font,%
      left/odd/foot/font/.alias*=foot/left/odd/font,%
      left/foot/odd/font/.alias*=foot/left/odd/font,%
      foot/odd/left/color/.alias=foot/left/odd/color,%
      odd/foot/left/color/.alias=foot/left/odd/color,%
      odd/left/foot/color/.alias=foot/left/odd/color,%
      left/odd/foot/color/.alias=foot/left/odd/color,%
      left/foot/odd/color/.alias=foot/left/odd/color,%
foot/center/odd/.fancy@hf=ocf,%
foot/center/odd/font/.store as code,%
foot/center/odd/color/.style={foot/center/odd/font+=\color{#1}},%
      foot/odd/center/.alias*=foot/center/odd,%
      odd/foot/center/.alias*=foot/center/odd,%
      odd/center/foot/.alias*=foot/center/odd,%
      center/odd/foot/.alias*=foot/center/odd,%
      center/foot/odd/.alias*=foot/center/odd,%
      foot/odd/center/font/.alias*=foot/center/odd/font,%
      odd/foot/center/font/.alias*=foot/center/odd/font,%
      odd/center/foot/font/.alias*=foot/center/odd/font,%
      center/odd/foot/font/.alias*=foot/center/odd/font,%
      center/foot/odd/font/.alias*=foot/center/odd/font,%
      foot/odd/center/color/.alias=foot/center/odd/color,%
      odd/foot/center/color/.alias=foot/center/odd/color,%
      odd/center/foot/color/.alias=foot/center/odd/color,%
      center/odd/foot/color/.alias=foot/center/odd/color,%
      center/foot/odd/color/.alias=foot/center/odd/color,%
foot/right/odd/.fancy@hf=orf,%
foot/right/odd/font/.store as code,%
foot/right/odd/color/.style={foot/right/odd/font+=\color{#1}},%
      foot/odd/right/.alias*=foot/right/odd,%
      odd/foot/right/.alias*=foot/right/odd,%
      odd/right/foot/.alias*=foot/right/odd,%
      right/odd/foot/.alias*=foot/right/odd,%
      right/foot/odd/.alias*=foot/right/odd,%
      foot/odd/right/font/.alias*=foot/right/odd/font,%
```

```
      odd/foot/right/font/.alias*=foot/right/odd/font,%
      odd/right/foot/font/.alias*=foot/right/odd/font,%
      right/odd/foot/font/.alias*=foot/right/odd/font,%
      right/foot/odd/font/.alias*=foot/right/odd/font,%
      foot/odd/right/color/.alias=foot/right/odd/color,%
      odd/foot/right/color/.alias=foot/right/odd/color,%
      odd/right/foot/color/.alias=foot/right/odd/color,%
      right/odd/foot/color/.alias=foot/right/odd/color,%
      right/foot/odd/color/.alias=foot/right/odd/color,%
foot/left/even/.fancy@hf=elf,%
foot/left/even/font/.store as code,%
foot/left/even/color/.style={foot/left/even/font+=\color{#1}},%
      foot/even/left/.alias*=foot/left/even,%
      even/foot/left/.alias*=foot/left/even,%
      even/left/foot/.alias*=foot/left/even,%
      left/even/foot/.alias*=foot/left/even,%
      left/foot/even/.alias*=foot/left/even,%
      foot/even/left/font/.alias*=foot/left/even/font,%
      even/foot/left/font/.alias*=foot/left/even/font,%
      even/left/foot/font/.alias*=foot/left/even/font,%
      left/even/foot/font/.alias*=foot/left/even/font,%
      left/foot/even/font/.alias*=foot/left/even/font,%
      foot/even/left/color/.alias=foot/left/even/color,%
      even/foot/left/color/.alias=foot/left/even/color,%
      even/left/foot/color/.alias=foot/left/even/color,%
      left/even/foot/color/.alias=foot/left/even/color,%
      left/foot/even/color/.alias=foot/left/even/color,%
foot/center/even/.fancy@hf=ecf,%
foot/center/even/font/.store as code,%
foot/center/even/color/.style={foot/center/even/font+=\color{#1}},%
      foot/even/center/.alias*=foot/center/even,%
      even/foot/center/.alias*=foot/center/even,%
      even/center/foot/.alias*=foot/center/even,%
      center/even/foot/.alias*=foot/center/even,%
      center/foot/even/.alias*=foot/center/even,%
      foot/even/center/font/.alias*=foot/center/even/font,%
      even/foot/center/font/.alias*=foot/center/even/font,%
      even/center/foot/font/.alias*=foot/center/even/font,%
      center/even/foot/font/.alias*=foot/center/even/font,%
      center/foot/even/font/.alias*=foot/center/even/font,%
      foot/even/center/color/.alias=foot/center/even/color,%
      even/foot/center/color/.alias=foot/center/even/color,%
      even/center/foot/color/.alias=foot/center/even/color,%
      center/even/foot/color/.alias=foot/center/even/color,%
      center/foot/even/color/.alias=foot/center/even/color,%
foot/right/even/.fancy@hf=erf,%
foot/right/even/font/.store as code,%
foot/right/even/color/.style={foot/right/even/font+=\color{#1}},%
      foot/even/right/.alias*=foot/right/even,%
      even/foot/right/.alias*=foot/right/even,%
      even/right/foot/.alias*=foot/right/even,%
      right/even/foot/.alias*=foot/right/even,%
      right/foot/even/.alias*=foot/right/even,%
      foot/even/right/font/.alias*=foot/right/even/font,%
      even/foot/right/font/.alias*=foot/right/even/font,%
      even/right/foot/font/.alias*=foot/right/even/font,%
      right/even/foot/font/.alias*=foot/right/even/font,%
      right/foot/even/font/.alias*=foot/right/even/font,%
      foot/even/right/color/.alias=foot/right/even/color,%
      even/foot/right/color/.alias=foot/right/even/color,%
      even/right/foot/color/.alias=foot/right/even/color,%
      right/even/foot/color/.alias=foot/right/even/color,%
      right/foot/even/color/.alias=foot/right/even/color,%
foot/inner/.style={foot/right/even={#1},foot/left/odd={#1}},%
foot/inner+/.style={foot/right/even+={#1},foot/left/odd+={#1}},%
```

```
1700  foot/inner*/.alias=foot/inner+,%
1701  foot/inner/font/.style={foot/right/even/font={#1},foot/left/odd/font={#1}},%
1702  foot/inner/color/.style={foot/right/even/color={#1},foot/left/odd/color={#1}},%
1703  foot/inner/font+/.style={foot/right/even/font+={#1},foot/left/odd/font+={#1}},%
1704  foot/inner/font*/.alias=foot/inner/font+,%
1705     inner/foot/.alias*=foot/inner,%
1706     inner/foot/font/.alias*=foot/inner/font,%
1707     inner/foot/color/.alias=foot/inner/color,%
1708  foot/outer/.style={foot/left/even={#1},foot/right/odd={#1}},%
1709  foot/outer+/.style={foot/left/even+={#1},foot/right/odd+={#1}},%
1710  foot/outer*/.alias=foot/outer+,%
1711  foot/outer/font/.style={foot/left/even/font={#1},foot/right/odd/font={#1}},%
1712  foot/outer/color/.style={foot/left/even/color={#1},foot/right/odd/color={#1}},%
1713  foot/outer/font+/.style={foot/left/even/font+={#1},foot/right/odd/font+={#1}},%
1714  foot/outer/font*/.alias=foot/outer/font+,%
1715     outer/foot/.alias*=foot/outer,%
1716     outer/foot/font/.alias*=foot/outer/font,%
1717     outer/foot/color/.alias=foot/outer/color,%
1718  head/inner/.style={head/right/even={#1},head/left/odd={#1}},%
1719  head/inner+/.style={head/right/even+={#1},head/left/odd+={#1}},%
1720  head/inner*/.alias=head/inner+,%
1721  head/inner/font/.style={head/right/even/font={#1},head/left/odd/font={#1}},%
1722  head/inner/color/.style={head/right/even/color={#1},head/left/odd/color={#1}},%
1723  head/inner/font+/.style={head/right/even/font+={#1},head/left/odd/font+={#1}},%
1724  head/inner/font*/.alias=head/inner/font+,%
1725     inner/head/.alias*=head/inner,%
1726     inner/head/font/.alias*=head/inner/font,%
1727     inner/head/color/.alias=head/inner/color,%
1728  head/outer/.style={head/left/even={#1},head/right/odd={#1}},%
1729  head/outer+/.style={head/left/even+={#1},head/right/odd+={#1}},%
1730  head/outer*/.alias=head/outer+,%
1731  head/outer/font/.style={head/left/even/font={#1},head/right/odd/font={#1}},%
1732  head/outer/color/.style={head/left/even/color={#1},head/right/odd/color={#1}},%
1733  head/outer/font+/.style={head/left/even/font+={#1},head/right/odd/font+={#1}},%
1734  head/outer/font*/.alias=head/outer/font+,%
1735     outer/head/.alias*=head/outer,%
1736     outer/head/font/.alias*=head/outer/font,%
1737     outer/head/color/.alias=head/outer/color,%
1738  inner/.style={foot/inner={#1},head/inner={#1}},%
1739  inner+/.style={foot/inner+={#1},head/inner+={#1}},%
1740  inner*/.alias=inner+,%
1741  inner/font/.style={foot/inner/font={#1},head/inner/font={#1}},%
1742  inner/font+/.style={foot/inner/font+={#1},head/inner/font+={#1}},%
1743  inner/font*/.alias=inner/font+,%
1744  inner/color/.style={foot/inner/color={#1},head/inner/color={#1}},%
1745  outer/.style={foot/outer={#1},head/outer={#1}},%
1746  outer+/.style={foot/outer+={#1},head/outer+={#1}},%
1747  outer*/.alias=outer+,%
1748  outer/font/.style={foot/outer/font={#1},head/outer/font={#1}},%
1749  outer/font+/.style={foot/outer/font+={#1},head/outer/font+={#1}},%
1750  outer/font*/.alias=outer/font+,%
1751  outer/color/.style={foot/outer/color={#1},head/outer/color={#1}},%
1752  offset/.style={head/offset={#1},foot/offset={#1}},%
1753     offset+/.style={head/offset+={#1},foot/offset+={#1}},%
1754     offset-/.style={head/offset-={#1},foot/offset-={#1}},%
1755     offset*/.style={head/offset*={#1},foot/offset*={#1}},%
1756  head/offset/.style={head/left/offset={#1},head/right/offset={#1}},%
1757     head/offset+/.style={head/left/offset+={#1},head/right/offset+={#1}},%
1758     head/offset-/.style={head/left/offset-={#1},head/right/offset-={#1}},%
1759     head/offset*/.style={head/left/offset*={#1},head/right/offset*={#1}},%
1760        offset/head/.alias*=head/offset,%
1761  foot/offset/.style={foot/left/offset={#1},foot/right/offset={#1}},%
1762     foot/offset+/.style={foot/left/offset+={#1},foot/right/offset+={#1}},%
1763     foot/offset-/.style={foot/left/offset-={#1},foot/right/offset-={#1}},%
1764     foot/offset*/.style={foot/left/offset*={#1},foot/right/offset*={#1}},%
```

```
1765        offset/foot/.alias*=foot/offset,%
1766  odd/offset/.style={left/odd/offset={#1},right/odd/offset={#1}},%
1767     odd/offset+/.style={left/odd/offset+={#1},right/odd/offset+={#1}},%
1768     odd/offset-/.style={left/odd/offset-={#1},right/odd/offset-={#1}},%
1769        offset/odd/.alias*=odd/offset,%
1770  even/offset/.style={left/even/offset={#1},right/even/offset={#1}},%
1771     even/offset+/.style={left/even/offset+={#1},right/even/offset+={#1}},%
1772     even/offset-/.style={left/even/offset-={#1},right/even/offset-={#1}},%
1773        offset/even/.alias*=even/offset,%
1774  left/offset/.style={foot/left/offset={#1},head/left/offset={#1}},%
1775     left/offset+/.style={foot/left/offset+={#1},head/left/offset+={#1}},%
1776     left/offset-/.style={foot/left/offset-={#1},head/left/offset-={#1}},%
1777     left/offset*/.style={foot/left/offset*={#1},head/left/offset*={#1}},%
1778        offset/left/.alias*=left/offset,%
1779  left/even/offset/.style={foot/left/even/offset={#1},head/left/even/offset={#1}},%
1780     left/even/offset+/.style={foot/left/even/offset+={#1},head/left/even/offset+={#1}},%
1781     left/even/offset-/.style={foot/left/even/offset-={#1},head/left/even/offset-={#1}},%
1782     left/even/offset*/.style={foot/left/even/offset*={#1},head/left/even/offset*={#1}},%
1783        left/offset/even/.alias*=left/even/offset,%
1784        even/left/offset/.alias*=left/even/offset,%
1785        even/offset/left/.alias*=left/even/offset,%
1786        offset/even/left/.alias*=left/even/offset,%
1787        offset/left/even/.alias*=left/even/offset,%
1788  left/odd/offset/.style={foot/left/odd/offset={#1},head/left/odd/offset={#1}},%
1789     left/odd/offset+/.style={foot/left/odd/offset+={#1},head/left/odd/offset+={#1}},%
1790     left/odd/offset-/.style={foot/left/odd/offset-={#1},head/left/odd/offset-={#1}},%
1791     left/odd/offset*/.style={foot/left/odd/offset*={#1},head/left/odd/offset*={#1}},%
1792        left/offset/odd/.alias*=left/odd/offset,%
1793        odd/left/offset/.alias*=left/odd/offset,%
1794        odd/offset/left/.alias*=left/odd/offset,%
1795        offset/odd/left/.alias*=left/odd/offset,%
1796        offset/left/odd/.alias*=left/odd/offset,%
1797  right/offset/.style={foot/right/offset={#1},head/right/offset={#1}},%
1798        right/offset+/.style={foot/right/offset+={#1},head/right/offset+={#1}},%
1799        right/offset-/.style={foot/right/offset-={#1},head/right/offset-={#1}},%
1800        right/offset*/.style={foot/right/offset*={#1},head/right/offset*={#1}},%
1801           offset/right/.alias*=right/offset,%
1802  right/even/offset/.style={foot/right/even/offset={#1},head/right/even/offset={#1}},%
1803    right/even/offset+/.style={foot/right/even/offset+={#1},head/right/even/offset+={#1}},%
1804    right/even/offset-/.style={foot/right/even/offset-={#1},head/right/even/offset-={#1}},%
1805    right/even/offset*/.style={foot/right/even/offset*={#1},head/right/even/offset*={#1}},%
1806        right/offset/even/.alias*=right/even/offset,%
1807        even/right/offset/.alias*=right/even/offset,%
1808        even/offset/right/.alias*=right/even/offset,%
1809        offset/even/right/.alias*=right/even/offset,%
1810        offset/right/even/.alias*=right/even/offset,%
1811  right/odd/offset/.style={foot/right/odd/offset={#1},head/right/odd/offset={#1}},%
1812     right/odd/offset+/.style={foot/right/odd/offset+={#1},head/right/odd/offset+={#1}},%
1813     right/odd/offset-/.style={foot/right/odd/offset-={#1},head/right/odd/offset-={#1}},%
1814     right/odd/offset*/.style={foot/right/odd/offset*={#1},head/right/odd/offset*={#1}},%
1815        right/offset/odd/.alias*=right/odd/offset,%
1816        odd/right/offset/.alias*=right/odd/offset,%
1817        odd/offset/right/.alias*=right/odd/offset,%
1818        offset/odd/right/.alias*=right/odd/offset,%
1819        offset/right/odd/.alias*=right/odd/offset,%
1820  head/left/offset/.style={head/left/even/offset={#1},head/left/odd/offset={#1}},%
1821     head/left/offset+/.style={head/left/even/offset+={#1},head/left/odd/offset+={#1}},%
1822     head/left/offset-/.style={head/left/even/offset-={#1},head/left/odd/offset-={#1}},%
1823     head/left/offset*/.style={head/left/even/offset*={#1},head/left/odd/offset*={#1}},%
1824        head/offset/left/.alias*=head/left/offset,%
1825        left/head/offset/.alias*=head/left/offset,%
1826        left/offset/head/.alias*=head/left/offset,%
1827        offset/head/left/.alias*=head/left/offset,%
1828        offset/left/head/.alias*=head/left/offset,%
1829  head/right/offset/.style={head/right/even/offset={#1},head/right/odd/offset={#1}},%
```

```
    head/right/offset+/.style={head/right/even/offset+={#1},head/right/odd/offset+={#1}},%
    head/right/offset-/.style={head/right/even/offset-={#1},head/right/odd/offset-={#1}},%
    head/right/offset*/.style={head/right/even/offset*={#1},head/right/odd/offset*={#1}},%
        head/offset/right/.alias*=head/right/offset,%
        right/head/offset/.alias*=head/right/offset,%
        right/offset/head/.alias*=head/right/offset,%
        offset/head/right/.alias*=head/right/offset,%
        offset/right/head/.alias*=head/right/offset,%
  foot/left/offset/.style={foot/left/even/offset={#1},foot/left/odd/offset={#1}},%
     foot/left/offset+/.style={foot/left/even/offset+={#1},foot/left/odd/offset+={#1}},%
     foot/left/offset-/.style={foot/left/even/offset-={#1},foot/left/odd/offset-={#1}},%
     foot/left/offset*/.style={foot/left/even/offset*={#1},foot/left/odd/offset*={#1}},%
        foot/offset/left/.alias*=foot/left/offset,%
        left/foot/offset/.alias*=foot/left/offset,%
        left/offset/foot/.alias*=foot/left/offset,%
        offset/foot/left/.alias*=foot/left/offset,%
        offset/left/foot/.alias*=foot/left/offset,%
  foot/right/offset/.style={foot/right/even/offset={#1},foot/right/odd/offset={#1}},%
    foot/right/offset+/.style={foot/right/even/offset+={#1},foot/right/odd/offset+={#1}},%
    foot/right/offset-/.style={foot/right/even/offset-={#1},foot/right/odd/offset-={#1}},%
    foot/right/offset*/.style={foot/right/even/offset*={#1},foot/right/odd/offset*={#1}},%
        foot/offset/right/.alias*=foot/right/offset,%
        right/foot/offset/.alias*=foot/right/offset,%
        right/offset/foot/.alias*=foot/right/offset,%
        offset/foot/right/.alias*=foot/right/offset,%
        offset/right/foot/.alias*=foot/right/offset,%
  head/left/even/offset/.store in skip cs=f@ncyO@elh,%
     head/left/even/offset/.append code=\fancy@setoffs,%
        head/even/offset/left/.alias*=head/left/even/offset,%
        head/even/left/offset/.alias*=head/left/even/offset,%
        head/offset/even/left/.alias*=head/left/even/offset,%
        head/offset/left/even/.alias*=head/left/even/offset,%
        head/left/offset/even/.alias*=head/left/even/offset,%
        left/head/offset/even/.alias*=head/left/even/offset,%
        left/head/even/offset/.alias*=head/left/even/offset,%
        left/offset/head/even/.alias*=head/left/even/offset,%
        left/offset/even/head/.alias*=head/left/even/offset,%
        left/even/offset/head/.alias*=head/left/even/offset,%
        left/even/head/offset/.alias*=head/left/even/offset,%
        even/head/offset/left/.alias*=head/left/even/offset,%
        even/head/left/offset/.alias*=head/left/even/offset,%
        even/offset/head/left/.alias*=head/left/even/offset,%
        even/offset/left/head/.alias*=head/left/even/offset,%
        even/left/offset/head/.alias*=head/left/even/offset,%
        even/left/head/offset/.alias*=head/left/even/offset,%
        offset/head/left/even/.alias*=head/left/even/offset,%
        offset/head/even/left/.alias*=head/left/even/offset,%
        offset/left/head/even/.alias*=head/left/even/offset,%
        offset/left/even/head/.alias*=head/left/even/offset,%
        offset/even/left/head/.alias*=head/left/even/offset,%
        offset/even/head/left/.alias*=head/left/even/offset,%
  head/left/odd/offset/.store in skip cs=f@ncyO@olh,%
     head/left/odd/offset/.append code=\fancy@setoffs,%
        head/odd/offset/left/.alias*=head/left/odd/offset,%
        head/odd/left/offset/.alias*=head/left/odd/offset,%
        head/offset/odd/left/.alias*=head/left/odd/offset,%
        head/offset/left/odd/.alias*=head/left/odd/offset,%
        head/left/offset/odd/.alias*=head/left/odd/offset,%
        left/head/offset/odd/.alias*=head/left/odd/offset,%
        left/head/odd/offset/.alias*=head/left/odd/offset,%
        left/offset/head/odd/.alias*=head/left/odd/offset,%
        left/offset/odd/head/.alias*=head/left/odd/offset,%
        left/odd/offset/head/.alias*=head/left/odd/offset,%
        left/odd/head/offset/.alias*=head/left/odd/offset,%
        odd/head/offset/left/.alias*=head/left/odd/offset,%
```

```
        odd/head/left/offset/.alias*=head/left/odd/offset,%
        odd/offset/head/left/.alias*=head/left/odd/offset,%
        odd/offset/left/head/.alias*=head/left/odd/offset,%
        odd/left/offset/head/.alias*=head/left/odd/offset,%
        odd/left/head/offset/.alias*=head/left/odd/offset,%
        offset/head/left/odd/.alias*=head/left/odd/offset,%
        offset/head/odd/left/.alias*=head/left/odd/offset,%
        offset/left/head/odd/.alias*=head/left/odd/offset,%
        offset/left/odd/head/.alias*=head/left/odd/offset,%
        offset/odd/left/head/.alias*=head/left/odd/offset,%
        offset/odd/head/left/.alias*=head/left/odd/offset,%
  head/right/even/offset/.store in skip cs=f@ncyO@erh,%
     head/right/even/offset/.append code=\fancy@setoffs,%
        head/even/offset/right/.alias*=head/right/even/offset,%
        head/even/right/offset/.alias*=head/right/even/offset,%
        head/offset/even/right/.alias*=head/right/even/offset,%
        head/offset/right/even/.alias*=head/right/even/offset,%
        head/right/offset/even/.alias*=head/right/even/offset,%
        right/head/offset/even/.alias*=head/right/even/offset,%
        right/head/even/offset/.alias*=head/right/even/offset,%
        right/offset/head/even/.alias*=head/right/even/offset,%
        right/offset/even/head/.alias*=head/right/even/offset,%
        right/even/offset/head/.alias*=head/right/even/offset,%
        right/even/head/offset/.alias*=head/right/even/offset,%
        even/head/offset/right/.alias*=head/right/even/offset,%
        even/head/right/offset/.alias*=head/right/even/offset,%
        even/offset/head/right/.alias*=head/right/even/offset,%
        even/offset/right/head/.alias*=head/right/even/offset,%
        even/right/offset/head/.alias*=head/right/even/offset,%
        even/right/head/offset/.alias*=head/right/even/offset,%
        offset/head/right/even/.alias*=head/right/even/offset,%
        offset/head/even/right/.alias*=head/right/even/offset,%
        offset/right/head/even/.alias*=head/right/even/offset,%
        offset/right/even/head/.alias*=head/right/even/offset,%
        offset/even/right/head/.alias*=head/right/even/offset,%
        offset/even/head/right/.alias*=head/right/even/offset,%
  head/right/odd/offset/.store in skip cs=f@ncyO@orh,%
     head/right/odd/offset/.append code=\fancy@setoffs,%
        head/odd/offset/right/.alias*=head/right/odd/offset,%
        head/odd/right/offset/.alias*=head/right/odd/offset,%
        head/offset/odd/right/.alias*=head/right/odd/offset,%
        head/offset/right/odd/.alias*=head/right/odd/offset,%
        head/right/offset/odd/.alias*=head/right/odd/offset,%
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        offset/right/odd/head/.alias*=head/right/odd/offset,%
        offset/odd/right/head/.alias*=head/right/odd/offset,%
        offset/odd/head/right/.alias*=head/right/odd/offset,%
  foot/left/even/offset/.store in skip cs=f@ncyO@elf,%
     foot/left/even/offset/.append code=\fancy@setoffs,%
        foot/even/offset/left/.alias*=foot/left/even/offset,%
        foot/even/left/offset/.alias*=foot/left/even/offset,%
```

```
        foot/offset/even/left/.alias*=foot/left/even/offset,%
        foot/offset/left/even/.alias*=foot/left/even/offset,%
        foot/left/offset/even/.alias*=foot/left/even/offset,%
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        offset/foot/even/left/.alias*=foot/left/even/offset,%
        offset/left/foot/even/.alias*=foot/left/even/offset,%
        offset/left/even/foot/.alias*=foot/left/even/offset,%
        offset/even/left/foot/.alias*=foot/left/even/offset,%
        offset/even/foot/left/.alias*=foot/left/even/offset,%
  foot/left/odd/offset/.store in skip cs=f@ncy0@olf,%
    foot/left/odd/offset/.append code=\fancy@setoffs,%
        foot/odd/offset/left/.alias*=foot/left/odd/offset,%
        foot/odd/left/offset/.alias*=foot/left/odd/offset,%
        foot/offset/odd/left/.alias*=foot/left/odd/offset,%
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        offset/foot/left/odd/.alias*=foot/left/odd/offset,%
        offset/foot/odd/left/.alias*=foot/left/odd/offset,%
        offset/left/foot/odd/.alias*=foot/left/odd/offset,%
        offset/left/odd/foot/.alias*=foot/left/odd/offset,%
        offset/odd/left/foot/.alias*=foot/left/odd/offset,%
        offset/odd/foot/left/.alias*=foot/left/odd/offset,%
  foot/right/even/offset/.store in skip cs=f@ncy0@erf,%
    foot/right/even/offset/.append code=\fancy@setoffs,%
        foot/even/offset/right/.alias*=foot/right/even/offset,%
        foot/even/right/offset/.alias*=foot/right/even/offset,%
        foot/offset/even/right/.alias*=foot/right/even/offset,%
        foot/offset/right/even/.alias*=foot/right/even/offset,%
        foot/right/offset/even/.alias*=foot/right/even/offset,%
        right/foot/offset/even/.alias*=foot/right/even/offset,%
        right/foot/even/offset/.alias*=foot/right/even/offset,%
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        right/even/foot/offset/.alias*=foot/right/even/offset,%
        even/foot/offset/right/.alias*=foot/right/even/offset,%
        even/foot/right/offset/.alias*=foot/right/even/offset,%
        even/offset/foot/right/.alias*=foot/right/even/offset,%
        even/offset/right/foot/.alias*=foot/right/even/offset,%
        even/right/offset/foot/.alias*=foot/right/even/offset,%
        even/right/foot/offset/.alias*=foot/right/even/offset,%
```

```
2025        offset/foot/right/even/.alias*=foot/right/even/offset,%
2026        offset/foot/even/right/.alias*=foot/right/even/offset,%
2027        offset/right/foot/even/.alias*=foot/right/even/offset,%
2028        offset/right/even/foot/.alias*=foot/right/even/offset,%
2029        offset/even/right/foot/.alias*=foot/right/even/offset,%
2030        offset/even/foot/right/.alias*=foot/right/even/offset,%
2031    foot/right/odd/offset/.store in skip cs=f@ncyO@orf,%
2032       foot/right/odd/offset/.append code=\fancy@setoffs,%
2033          foot/odd/offset/right/.alias*=foot/right/odd/offset,%
2034          foot/odd/right/offset/.alias*=foot/right/odd/offset,%
2035          foot/offset/odd/right/.alias*=foot/right/odd/offset,%
2036          foot/offset/right/odd/.alias*=foot/right/odd/offset,%
2037          foot/right/offset/odd/.alias*=foot/right/odd/offset,%
2038          right/foot/offset/odd/.alias*=foot/right/odd/offset,%
2039          right/foot/odd/offset/.alias*=foot/right/odd/offset,%
2040          right/offset/foot/odd/.alias*=foot/right/odd/offset,%
2041          right/offset/odd/foot/.alias*=foot/right/odd/offset,%
2042          right/odd/offset/foot/.alias*=foot/right/odd/offset,%
2043          right/odd/foot/offset/.alias*=foot/right/odd/offset,%
2044          odd/foot/offset/right/.alias*=foot/right/odd/offset,%
2045          odd/foot/right/offset/.alias*=foot/right/odd/offset,%
2046          odd/offset/foot/right/.alias*=foot/right/odd/offset,%
2047          odd/offset/right/foot/.alias*=foot/right/odd/offset,%
2048          odd/right/offset/foot/.alias*=foot/right/odd/offset,%
2049          odd/right/foot/offset/.alias*=foot/right/odd/offset,%
2050          offset/foot/right/odd/.alias*=foot/right/odd/offset,%
2051          offset/foot/odd/right/.alias*=foot/right/odd/offset,%
2052          offset/right/foot/odd/.alias*=foot/right/odd/offset,%
2053          offset/right/odd/foot/.alias*=foot/right/odd/offset,%
2054          offset/odd/right/foot/.alias*=foot/right/odd/offset,%
2055          offset/odd/foot/right/.alias*=foot/right/odd/offset,%
2056    head/inner/offset/.style={head/right/even/offset={#1},head/left/odd/offset={#1}},%
2057    head/inner/offset+/.style={head/right/even/offset+={#1},head/left/odd/offset+={#1}},%
2058    head/inner/offset-/.style={head/right/even/offset-={#1},head/left/odd/offset-={#1}},%
2059    head/inner/offset*/.style={head/right/even/offset*={#1},head/left/odd/offset*={#1}},%
2060       head/offset/inner/.alias*=head/inner/offset,%
2061       offset/head/inner/.alias*=head/inner/offset,%
2062       offset/inner/head/.alias*=head/inner/offset,%
2063       inner/head/offset/.alias*=head/inner/offset,%
2064       inner/offset/head/.alias*=head/inner/offset,%
2065    head/outer/offset/.style={head/left/even/offset={#1},head/right/odd/offset={#1}},%
2066    head/outer/offset+/.style={head/left/even/offset+={#1},head/right/odd/offset+={#1}},%
2067    head/outer/offset-/.style={head/left/even/offset-={#1},head/right/odd/offset-={#1}},%
2068    head/outer/offset*/.style={head/left/even/offset*={#1},head/right/odd/offset*={#1}},%
2069       head/offset/outer/.alias*=head/outer/offset,%
2070       offset/head/outer/.alias*=head/outer/offset,%
2071       offset/outer/head/.alias*=head/outer/offset,%
2072       outer/head/offset/.alias*=head/outer/offset,%
2073       outer/offset/head/.alias*=head/outer/offset,%
2074    foot/inner/offset/.style={foot/right/even/offset={#1},foot/left/odd/offset={#1}},%
2075    foot/inner/offset+/.style={foot/right/even/offset+={#1},foot/left/odd/offset+={#1}},%
2076    foot/inner/offset-/.style={foot/right/even/offset-={#1},foot/left/odd/offset-={#1}},%
2077    foot/inner/offset*/.style={foot/right/even/offset*={#1},foot/left/odd/offset*={#1}},%
2078       foot/offset/inner/.alias*=foot/inner/offset,%
2079       offset/foot/inner/.alias*=foot/inner/offset,%
2080       offset/inner/foot/.alias*=foot/inner/offset,%
2081       inner/foot/offset/.alias*=foot/inner/offset,%
2082       inner/offset/foot/.alias*=foot/inner/offset,%
2083    foot/outer/offset/.style={foot/left/even/offset={#1},foot/right/odd/offset={#1}},%
2084    foot/outer/offset+/.style={foot/left/even/offset+={#1},foot/right/odd/offset+={#1}},%
2085    foot/outer/offset-/.style={foot/left/even/offset-={#1},foot/right/odd/offset-={#1}},%
2086    foot/outer/offset*/.style={foot/left/even/offset*={#1},foot/right/odd/offset*={#1}},%
2087       foot/offset/outer/.alias*=foot/outer/offset,%
2088       offset/foot/outer/.alias*=foot/outer/offset,%
2089       offset/outer/foot/.alias*=foot/outer/offset,%
```

```
2090       outer/foot/offset/.alias*=foot/outer/offset,%
2091       outer/offset/foot/.alias*=foot/outer/offset,%
2092    inner/offset/.style={foot/inner/offset={#1},head/inner/offset={#1}},%
2093    inner/offset+/.style={foot/inner/offset+={#1},head/inner/offset+={#1}},%
2094    inner/offset-/.style={foot/inner/offset-={#1},head/inner/offset-={#1}},%
2095    inner/offset*/.style={foot/inner/offset*={#1},head/inner/offset*={#1}},%
2096       offset/inner/.alias*=inner/offset,%
2097    outer/offset/.style={foot/outer/offset={#1},head/outer/offset={#1}},%
2098    outer/offset+/.style={foot/outer/offset+={#1},head/outer/offset+={#1}},%
2099    outer/offset-/.style={foot/outer/offset-={#1},head/outer/offset-={#1}},%
2100    outer/offset*/.style={foot/outer/offset*={#1},head/outer/offset*={#1}},%
2101       offset/outer/.alias*=outer/offset,%
2102    reset/.style={norule,head=,foot=,offset=\z@,foot/rule/skip,rule/font=,font=},%
2103       reset/.value forbidden,%
2104 }% keys for \pagesetup (stored into token \itf@tk)
2105 \AtBeginDocument{%
2106 \ifdim\headwidth<\z@
2107 %% This catches the case that \headwidth hasn't been initialized and the
2108 %% case that the user added something to \headwidth in the expectation that
2109 %% it was initialized to \textwidth. We compensate this now. This loses if
2110 %% the user intended to multiply it by a factor. But that case is more
2111 %% likely done by saying something like \headwidth=1.2\textwidth.
2112 %% The doc says you have to change \headwidth after the first call to
2113 %% \pagestyle{fancy}. This code is just to catch the most common cases were
2114 %% that requirement is violated.
2115    \global\advance\headwidth123456789sp\global\advance\headwidth\textwidth
2116 \fi}
2117 ⟨/fancyhdr⟩
```

21·10 † marks

```
2118 ⟨*marks⟩
2119 \ProvidesPackage{interfaces-marks}
2120    [2011/02/19 v3.1 easier use of e-TeX marks (FC)]
2121 \RequirePackage{interfaces-base}
```

\marksthe

```
2122 \newrobustcmd\marksthe[2]{%
2123    \ifcsname marks@#1\endcsname \else \itf@marks@new{#1}\fi
2124    {\toks@{#2}\expandafter\marks\csname marks@#1\endcsname{\the\toks@}}%
2125 }% \marksthe
```

\marksthecs

```
2126 \newrobustcmd*\marksthecs[2]{%
2127    \ifcsname marks@#1\endcsname \else \itf@marks@new{#1}\fi
2128    \ifcsundef{#2}
2129       {}
2130       {{\toks@\expandafter\expandafter\expandafter{%
2131             \csname #2\endcsname}%
2132        \expandafter\marks\csname marks@#1\endcsname{\the\toks@}}}%
2133 }% \marksthecs
```

\itf@marks@new

```
2134 \def\itf@marks@new#1{%
2135    \expandafter\newmarks\csname marks@#1\endcsname
2136    \PackageInfo{interfaces-marks}{marks `#1' defined}%
2137 }% \itf@marks@new
```

\thefirstmarks
\thebotmarks
\thetopmarks

Purely expandable in exactly one step of expansion.

```
2138 \newcommand*\thefirstmarks[1]{\romannumeral
2139    \ifcsname marks@#1\endcsname \expandafter\z@
2140       \firstmarks\csname marks@#1\expandafter\endcsname
2141    \else \expandafter\z@
2142    \fi
```

```
}% \thefirstmarks
\newcommand*\thebotmarks[1]{\romannumeral
   \ifcsname marks@#1\endcsname \expandafter\z@
      \botmarks\csname marks@#1\expandafter\endcsname
   \else \expandafter\z@
   \fi
}% \thebotmarks
\newcommand*\thetopmarks[1]{\romannumeral
   \ifcsname marks@#1\endcsname \expandafter\z@
      \topmarks\csname marks@#1\expandafter\endcsname
   \else \expandafter\z@
   \fi
}% \thetopmarks
```

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

```
%% \getthemarks\firstmarks{section}\macro
\newrobustcmd*\getthemarks[3]{%
   \ifcsname marks@#2\endcsname
      \edef#3{\unexpanded\expandafter{#1\csname marks@#2\endcsname}}%
   \else \let#3\@undefined
   \fi
}% \getthemarks
```

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

\getthebotmarks

\getthetopmarks

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

\ifmarksequal

```
%% \ifmarksequal\firstmarks\botmarks{subsection}{ true }{ false }
\newrobustcmd*\ifmarksequal[3]{%
   \begingroup
      \getthemarks{#1}{#3}\x
      \getthemarks{#2}{#3}\y
   \expandafter\endgroup
   \csname ltx@\ifdefined\x\ifdefined\y
      \ifx\x\y first\else
      second\fi\else second\fi\else second\fi
   oftwo\endcsname
}% \ifmarksequal
```

⟨/marks⟩

21.11 Interface tocloft : \tocsetup, \lofsetup, \lotsetup and \listofsetup

```
⟨*tocloft⟩
\ProvidesPackage{interfaces-tocloft}
   [2011/02/19 v3.1 pgfkeys macros for tocloft (FC)]
\RequirePackage{interfaces-base}
\itf@Check@Package{tocloft}
```

\tocsetup \lofsetup \lotsetup \listofsetup The user commands.

```
\newrobustcmd\tocsetup[1]{%
   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/toc}{#1}}%
}% \tocsetup
\newrobustcmd\lofsetup[1]{%
   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/lof}{#1}}%
}% \lofsetup
\newrobustcmd\lotsetup[1]{%
   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/lot}{#1}}%
}% \lotsetup
\newrobustcmd\listofsetup[2]{%
```

```
   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/#1}{#2}}%
}% \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`.

```
\def\itf@cft@newlistof#1#2#3{%
% #1=toc/lof (ext.),
% #2=entry (\newlistof only),
% #3=title (\newlistof only)
   \pgfqkeys{/itf/tocloft/#1}{%
      depth/.store in counter cs=c@#1depth,%
      depth/.append code=\expandafter\global\csname c@#1depth\endcsname
                                              \csname c@#1depth\endcsname
            \addtocontents{#1}{\csname c@#1depth\endcsname
                               \the\csname c@#1depth\endcsname\relax},%
         #1depth/.alias*=depth,%
      pagestyle/.code=\tocloftpagestyle{##1},%
      parskip/.store in skip cs=cftparskip,%
         parsep/.alias=parskip,%
      mark/.store in cs=cftmark#1,%
         marks/.alias=mark,%
         mark=,%
      label/.store as code,%
      ref/.store as code,%
         ref/.initial=\csname cft#1title\endcsname,% overwritten (toc,lof,lot)
         ref/.default=\csname cft#1title\endcsname,% overwritten (toc,lof,lot)
         ref/.blank=\pgfkeysnovalue,%
      title/.store as code in cs=cft#1title,% overwritten below for toc, lof and lot
      title/top/.store in skip cs=cftbefore#1titleskip,%
         beforetitleskip/.alias*=title/top,%
      title/bottom/.store in skip cs=cftafter#1titleskip,%
         aftertitleskip/.alias*=title/bottom,%
         title/skip/.alias*=title/bottom,%
      title/font/.store as code in cs=cft#1titlefont,%
         title/format/.alias*=title/font,%
      title/color/.store as color,%
         title/color/.append code=\pgfkeysalso{/itf/tocloft/#1/title/font+={%
            \color{\pgfkeysvalueof{/itf/tocloft/#1/title/color}}}},%
         title/font/color/.alias=title/color,%
         title/format/color/.alias=title/color,%
      title/after/.store as code in cs=cftafter#1title,%
      title/command/.code=\csdef{@cftmake#1title}####1{##1},%
      dotsep/.code=\itf@units@mu\itf@musk{##1}%    converts to mu
                   \edef\cftdotsep{\itf@strip@mu\itf@musk},%
         dotsep/.default=4.5mu,%
         dotsep/.blank=\cftnodots,%
      dot/.store in=\cftdot,%
      before/.store as code,%
      after/.store as code,%
      columns/before@hook/.is private=interfaces-tocloft,%
      columns/after@hook/.is private=interfaces-tocloft,%
      columns/before@hook/.initial=,%
      columns/after@hook/.initial=,%
      columns/.code={\ltx@ifpackageloaded{multicol}{%
         \pgfkeysEsetvalue\pgfkeyscurrentkey{\number##1}%
         \ifnum\number##1>\@ne
            \pgfkeysgetvalue{/itf/tocloft/#1/columns/before@hook}\itf@tp
            \ifx \itf@tp\@empty
               \pgfkeyssetvalue{/itf/tocloft/#1/columns/before@hook}{%
                  \begingroup
                  \multicolsep\pgfkeysvalueof{/itf/tocloft/#1/multicolsep}\relax
                  \columnsep\pgfkeysvalueof{/itf/tocloft/#1/columns/sep}\relax
                  \columnseprule\pgfkeysvalueof{/itf/tocloft/#1/columns/rule}\relax
                  \pgfkeysvalueof{/itf/tocloft/#1/multicols/beforebegin}%
```

```
                \def\itf@tocloft@aftermulticols{%
                      \pgfkeysvalueof{/itf/tocloft/#1/multicols/afterend}}%
                \begin{multicols}{\pgfkeysvalueof{/itf/tocloft/#1/columns}}%
                \pgfkeysgetvalue{/itf/tocloft/#1/columns/rule/color}\columnseprulecolor
                \pgfkeysvalueof{/itf/tocloft/#1/multicols/afterbegin}%
             }%
             \pgfkeyssetvalue{/itf/tocloft/#1/columns/after@hook}{%
                \pgfkeysvalueof{/itf/tocloft/#1/multicols/beforeend}%
                \aftergroup\itf@tocloft@aftermulticols
                \end{multicols}%
                \endgroup
             }%
          \fi
       \else
          \pgfkeyslet\pgfkeyscurrentkey\@ne
          \pgfkeyslet{/itf/tocloft/#1/columns/before@hook}\@empty
          \pgfkeyslet{/itf/tocloft/#1/columns/after@hook}\@empty
       \fi}
       {\PackageError{interfaces-tocloft}
          {Key 'columns': package multicol is required}\@eha}%
    },%
    columns/.default=2,columns/.blank=1,%
       multicol/.alias=columns,%
       multicols/.alias=columns,%
    twocolumns/.true=\pgfkeysalso{columns=2},%
    twocolumns/.false=\pgfkeysalso{columns=1},%
    columns/rule/.estore as dimen,%
    columns/rule/.default=\columnseprule,%
    columns/rule,% assign default
       columnseprule/.alias*=columns/rule,%
       columns/rule/width/.alias*=columns/rule,%
    columns/sep/.estore as dimen,%
    columns/sep/.default=\columnsep,%
    columns/sep/.blank=10\p@,%
    columns/sep,% assign default
       columnsep/.alias*=columns/sep,%
    columns/rule/color/.store as color command,%
    columns/rule/color,% assign default (\normalcolor)
       columnseprulecolor/.alias*=columns/rule/color,%
       columns/rulecolor/.alias*=columns/rule/color,%
       columns/color/.alias*=columns/rule/color,%
    multicolsep/.estore as glue,%
       multicolsep/.default=0pt plus4pt minus3pt,%
       multicolsep,% sets default
    milticols/beforebegin/.initial=,multicols/beforebegin/.default=,%
    multicols/afterbegin/.initial=,multicols/afterbegin/.default=,%
       multicols/begin/.alias=multicols/afterbegin,%
       multicols/before/.alias=multicols/afterbegin,%
    multicols/beforeend/.initial=,multicols/beforeend/.default=,%
    multicols/afterend/.initial=,multicols/afterend/.default=,%
       multicols/end/.alias=multicols/beforeend,%
       multicols/after/.alias=multicols/beforeend,%
}% \pgfkeys
\itf@AfterPackage{interfaces-bookmark}{%
\def\itf@tocloft@bookmark@handler##1##2{%
   \pgfkeysEaddvalue{/itf/tocloft/##1/bookmark}{}{,##2}%
   \pgfkeysgetvalue{/itf/tocloft/##1/bookmark/text}\itf@tp
   \ifx \itf@tp\@empty
      \pgfkeyssetvalue{/itf/tocloft/##1/bookmark/text}\contentsname \fi}%
\pgfqkeys{/itf/tocloft/#1}{%
   bookmark/.is multiple choice,%
   bookmark/bold/.true=\itf@tocloft@bookmark@handler{#1}{bold=true},%
   bookmark/bold/.false=\itf@tocloft@bookmark@handler{#1}{bold=false},%
   bookmark/italic/.true=\itf@tocloft@bookmark@handler{#1}{italic=true},%
   bookmark/italic/.false=\itf@tocloft@bookmark@handler{#1}{italic=false},%
```

```
      bookmark/color/.code=\itf@tocloft@bookmark@handler{#1}{color={##1}},%
      bookmark/level/.code=\pgfkeysEsetvalue{/itf/tocloft/#1/bookmark/level}{%
                     \ifcsname toclevel@##1\endcsname
                        \csname toclevel@##1\endcsname
                     \else##1\fi}%
                     \itf@tocloft@bookmark@handler{#1}{},%
         bookmark/level/.default=-1,%
         bookmark/level/.initial=-1,%
      bookmark/text/.store as code,%
         bookmark/text/.default=\contentsname,%
      bookmark/.unknown/.code=\pgfkeysEaddvalue{/itf/tocloft/#1/bookmark}
                                          {}{\pgfkeyscurrentname={##1}},%
      bookmark/.initial=,%
   }% \pgfkeys
   }% AfterPackage interfaces-bookmark
   %% while making a format \jobname is expanded to the name of the format...
   %% Therefore, the following commands must be expanded \AtEndPreamble
   \AfterPreamble{%
      \BeforeFile{\jobname.#1}{%
         \pgfkeysvalueof{/itf/tocloft/#1/before}%
         \pgfkeysvalueof{/itf/tocloft/#1/columns/before@hook}%
      }%
      \AfterFile{\jobname.#1}{%
         \pgfkeysvalueof{/itf/tocloft/#1/columns/after@hook}%
         \pgfkeysvalueof{/itf/tocloft/#1/after}%
      }%
   }%
   \ifcsname #1setup\endcsname\else
      \pgfqkeys{/itf/tocloft/#1}{%
         title={#3},%
         pagenumbers/.true=\@cftpnumon{#2},%
         pagenumbers/.false=\@cftpnumoff{#2},%
            pagenumbers/on/.alias=pagenumbers/true,
            pagenumbers/off/.alias=pagenumbers/false,
            pagenumber/.alias=pagenumbers,%
      }%
      \expandafter\pretocmd\csname @cftmake#1title\expandafter\endcsname
         \expandafter{\expandafter\itf@tocloft\csname cft#1title\endcsname{#1}{listof#2}}
      {\@PackageInfoNoLine{interfaces-tocloft}
         {\expandafter\string\csname @cftmake#1title\endcsname\space
            successfully augmented}}
      {\@PackageWarningNoLine{interfaces-tocloft}
         {\expandafter\string\csname @cftmake#1title\endcsname\space
            \space could not be patched
         \MessageBreak Keys label and bookmark won't work for \string\listofsetup}}%
   \fi
}% \itf@cft@newlistof
```

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

```
\itf@cft@newlistof{toc}{}{}
\itf@cft@newlistof{lof}{}{}
\itf@cft@newlistof{lot}{}{}

%% Specific to toc only ------------------------------------------------------
\pgfqkeys{/itf/tocloft/toc}{%
   title/.store as code in cs=contentsname,%
      contentsname/.alias=title,%
   ref/.initial=\contentsname,%
      ref/.default=\contentsname,%
   pagenumbers/.style={% boolean key
      part/pagenumbers={#1},chapter/pagenumbers={#1},section/pagenumbers={#1},%
      subsubsection/pagenumbers={#1},subsubsection/pagenumbers={#1},%
      paragraph/pagenumbers={#1},subparagraph/pagenumbers={#1}},%
   pagenumber/.alias=pagenumbers,%
```

```
}%
%% Specific to lof and lot ----------------------------------------------------
\pgfqkeys{/itf/tocloft/lof}{%
   title/.store as code in cs=listfigurename,%
      listfigurename/.alias=title,%
   ref/.initial=\listfigurename,%
      ref/.default=\listfigurename,%
}%
\pgfqkeys{/itf/tocloft/lot}{%
   title/.store as code in cs=listtablename,%
      listtablename/.alias=title,%
   ref/.initial=\listtablename,%
      ref/.default=\listtablename,%
}%
\if@cftsubfigopt
\pgfqkeys{/itf/tocloft}{%
   lof/pagenumbers/.style={figure/pagenumbers={#1},subfigure/pagenumbers={#1}},%
      lof/pagenumber/.alias=lof/pagenumbers,%
   lot/pagenumbers/.style={figure/pagenumbers={#1},subfigure/pagenumbers={#1}},%
      lot/pagenumber/.alias=lot/pagenumbers,%
}%
\else
\pgfqkeys{/itf/tocloft}{%
   lof/pagenumbers/.style={figure/pagenumbers={#1}},%
      lof/pagenumber/.alias=lof/pagenumbers,%
   lot/pagenumbers/.style={figure/pagenumbers={#1}},%
      lot/pagenumber/.alias=lot/pagenumbers,%
}%
\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`.

```
\def\itf@cft@name#1.#2.#3\@nil{cft#1\itf@cft@secname{#2}#3}
\def\itf@cft@secname#1{%
   \expandafter\itf@cft@sec@name\csname#1\endcsname{#1}%
}% \itf@cft@secname
\def\itf@cft@sec@name#1#2{%
   \ifx#1\relax #2\else
   \ifx#1\section sec\else
      \ifx#1\subsection subsec\else
         \ifx#1\subsubsection subsubsec\else
            \ifx#1\paragraph para\else
               \ifx#1\subparagraph subpara\else
                  \ifx#1\figure fig\else
                     \ifx#1\subsubfigure subfig\else
                        \ifx#1\table tab\else
                           \ifx#1\subtable subtab\else
                              \ifx#1\chapter chap\else
                                 #2\fi
   \fi\fi\fi\fi\fi\fi\fi\fi\fi\fi
}% \itf@cft@section@name

%% tocloft setup for tables sections :
\pgfkeys{%
/handlers/.cft@def/.style={%
   \pgfkeyscurrentpath/.store in cs=\itf@cft@name #1\@nil},%
/handlers/.cft@code/.style={%
   \pgfkeyscurrentpath/.store as code in cs=\itf@cft@name #1\@nil},%
/handlers/.cft@length/.style={%
   \pgfkeyscurrentpath/.store in skip cs=\itf@cft@name #1\@nil},%
}
```

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

```
\def\itf@cft@newsection{\itf@cft@new@section{/itf/tocloft}}
\def\itf@cft@new@section#1#2#3{% #2 = toc | lof | lot, #3=part / chap / sec / subsec etc.
   \pgfqkeys{#1/#2/#3}{%
      skip/.cft@length=before.#3.skip,%
         beforeskip/.alias*=skip,%
         top/.alias*=skip,%
      indent/.cft@length=.#3.indent,%
      font/.cft@code=.#3.font,%
      font/.append code=\pgfkeysalso{/itf/tocloft/#2/#3/pagenumber/font={##1}},%
         format/.alias*=font,%
      color/.store as color,%
         color/.append code=\pgfkeysalso{/itf/tocloft/#2/#3/font+={%
            \color{\pgfkeysvalueof{/itf/tocloft/#2/#3/color}}%
            \ifdefined\hypersetup \hypersetup{%
               linkcolor=\pgfkeysvalueof{/itf/tocloft/#2/#3/color}}%
            \fi}},%
         font/color/.alias=color,%
         format/color/.alias=color,%
      number/width/.cft@length=.#3.numwidth,%
         numwidth/.alias*=number/width,%
      presnum/.cft@code=.#3.presnum,%
         number/before/.alias*=presnum,%
      aftersnum/.cft@code=.#3.aftersnum,%
         number/after/.alias*=aftersnum,%
      aftersnumb/.cft@code=.#3.aftersnumb,%
         title/before/.alias*=aftersnumb,%
      leader/.cft@def=.#3.leader,%
         leader/.default=\cftdotfill{\csname\itf@cft@name.#3.dotsep\@nil\endcsname},%
         leaders/.alias=leader,%
      dotsep/.code={\ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \csdef{\itf@cft@name.#3.dotsep\@nil}{\cftdotsep}%
         \else
            \itf@units@mu\itf@musk{##1}%
            \csedef{\itf@cft@name.#3.dotsep\@nil}{\itf@strip@mu\itf@musk}%
         \fi},%
         dotsep/.blank=\cftnodots,%
      nodots/.code=\csdef{\itf@cft@name.#3.dotsep\@nil}{\cftnodots},%
         nodots/.value forbidden,%
      pagefont/.cft@code=.#3.pagefont,%
         page/font/.alias*=pagefont,%
         pagenumber/font/.alias*=pagefont,%
         pagenumbers/font/.alias*=pagefont,%
      page/color/.store as color,%
         page/color/.append code=\pgfkeysalso{/itf/tocloft/#2/#3/pagefont+={%
            \color{\pgfkeysvalueof{/itf/tocloft/#2/#3/page/color}}%
            \ifdefined\hypersetup \hypersetup{%
               linkcolor=\pgfkeysvalueof{/itf/tocloft/#2/#3/page/color}}%
            \fi}},%
         pagenumber/color/.alias=page/color,%
         pagenumbers/color/.alias=page/color,%
         page/font/color/.alias=page/color,%
         pagenumber/font/color/.alias=page/color,%
         pagenumbers/font/color/.alias=page/color,%
      afterpnum/.cft@code=.#3.afterpnum,%
         page/after/.alias*=afterpnum,%
         pagenumber/after/.alias*=afterpnum,%
      pagenumbers/.on=\@cftpnumon{\itf@cft@secname{#3}},%
      pagenumbers/.off=\@cftpnumoff{\itf@cft@secname{#3}},%
         pagenumber/.alias=pagenumbers,%
   }% \pgfqkeys
}% \itf@cft@new@section

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

```
                subsubsec,subsubsection,para,paragraph,subpara,subparagraph%
   \do{\edef\itf@tp{\noexpand\itf@cft@newsection{toc}{\itf@tp}}\itf@tp}%
\if@cftsubfigopt
   \@for\itf@tp:=fig,figure,subfig,subfigure%
      \do{\edef\itf@tp{\noexpand\itf@cft@newsection{lof}{\itf@tp}}\itf@tp}%
   \@for\itf@tp:=tab,table,subtab,subtable%
      \do{\edef\itf@tp{\noexpand\itf@cft@newsection{lot}{\itf@tp}}\itf@tp}%
\else
   \@for\itf@tp:=fig,figure%
      \do{\edef\itf@tp{\noexpand\itf@cft@newsection{lof}{\itf@tp}}\itf@tp}%
   \@for\itf@tp:=tab,table%
      \do{\edef\itf@tp{\noexpand\itf@cft@newsection{lot}{\itf@tp}}\itf@tp}%
\fi
```

\@cftmaketoctitle (patch)
\@cftmakeloftitle (patch)
\@cftmakelottitle (patch)
\\newlistof (patch)

```
\itf@patch\pretocmd\@cftmaketoctitle
   {\itf@tocloft\contentsname{toc}{tableofcontents}}
   {\@PackageInfoNoLine{interfaces-tocloft}
      {\string\@cftmaketoctitle\space successfully augmented}}
   {\@PackageWarningNoLine{interfaces-tocloft}
      {\string\@cftmaketoctitle\space could not be patched
      \MessageBreak label and bookmark keys for \string\tocsetup\space won't work}}%
\itf@patch\pretocmd\@cftmakeloftitle
   {\itf@tocloft\listfigurename{lof}{listoffigures}}
   {\@PackageInfoNoLine{interfaces-tocloft}
      {\string\@cftmakeloftitle\space successfully augmented}}
   {\@PackageWarningNoLine{interfaces-tocloft}
      {\string\@cftmakeloftitle\space could not be patched
      \MessageBreak label and bookmark keys for \string\lofsetup\space won't work}}%
\itf@patch\pretocmd\@cftmakelottitle
   {\itf@tocloft\listtablename{lot}{listoftables}}
   {\@PackageInfoNoLine{interfaces-tocloft}
      {\string\@cftmakelottitle\space successfully augmented}}
   {\@PackageWarningNoLine{interfaces-tocloft}
      {\string\@cftmakelottitle\space could not be patched
      \MessageBreak label and bookmark keys for \string\lotsetup\space won't work}}%
\expandafter\itf@patch\expandafter\patchcmd\csname\string\newlistof\endcsname
   {#4}{\csname cft#3title\endcsname}
   {\@PackageInfoNoLine{interfaces-tocloft}
      {\string\newlistof\space successfully patched}}
   {\@PackageWarningNoLine{interfaces-tocloft}
      {\string\newlistof\space could not be patched
      \MessageBreak \string\listofsetup\space will not work}}%
\expandafter\itf@patch\expandafter\apptocmd\csname\string\newlistof\endcsname
   {\itf@cft@newlistof{#3}{#2}{#4}}
   {\@PackageInfoNoLine{interfaces-tocloft}
      {\string\newlistof\space successfully augmented}}
   {\@PackageWarningNoLine{interfaces-tocloft}
      {\string\newlistof\space could not be patched
      \MessageBreak \string\listofsetup\space will not work}}%
\expandafter\itf@patch\expandafter\apptocmd\csname\string\newlistentry\endcsname
   {\itf@cft@newsection{#3}{#2}}
   {\@PackageInfoNoLine{interfaces-tocloft}
      {\string\newlistentry\space successfully augmented}}
   {\@PackageWarningNoLine{interfaces-tocloft}
      {\string\newlistentry\space could not be patched
      \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.

```
\def\itf@tocloft#1#2#3{%
   \expandafter\def\expandafter#1\expandafter{%
      \expandafter\itf@cft@label
            \expandafter#1\expandafter{#1}{#2}{#3}}%
```

```
}% \itf@tocloft
\long\def\itf@cft@label#1#2#3#4{%
   \def#1{#2}% restore original
   \begingroup
   \pgfkeysifdefined{/itf/tocloft/#3/bookmark}
      {%
      \raisedhyperdef{interfaces}{#4}{#2}%
      \pgfkeysgetvalue{/itf/tocloft/#3/bookmark/text}\itf@tp
      \ifx \itf@tp\@empty \else
         \pgfkeysgetvalue{/itf/tocloft/#3/bookmark}\@tempa
         \expandafter\bookmark\expandafter[%
            \expandafter{\@tempa,
               dest=interfaces.#4,%
               level=\pgfkeysvalueof{/itf/tocloft/#3/bookmark/level}%
            }]{\pgfkeysvalueof{/itf/tocloft/#3/bookmark/text}}%
         \global\BKM@startatroottrue
      \fi}
      {#2}%
   \pgfkeysgetvalue{/itf/tocloft/#3/label}\itf@tp
   \ifx \itf@tp\@empty \else
      \def\@currentHref{interfaces.#4}%
      \pgfkeysgetvalue{/itf/tocloft/#3/ref}\@currentlabel
      \def\@currentlabelname{#2}%
      \label{\pgfkeysvalueof{/itf/tocloft/#3/label}}%
   \fi
   \endgroup
   \gdef\itf@tp{\def#1{#2}\global\let\itf@tp \relax}% restore original
   \aftergroup\itf@tp % simple group introduced by tocloft to print \contentsname
}% \itf@cft@label

⟨/tocloft⟩
```

21·12 † Interface ☞ makecell : \repeatcell

```
⟨*makecell⟩
\ProvidesPackage{interfaces-makecell}
   [2011/02/19 v3.1 repeatcell to fill in tabulars (FC)]
\RequirePackage{interfaces-base}
\itf@Check@Package{makecell}
\edef\itf@AtEnd{\catcode126 \the\catcode126}% 126 = ~
\AtEndOfPackage{\itf@AtEnd}
\catcode126 \active % 126 = ~
```

21.12.1 countvalues

\countvalues

```
\def\countvalues#1{\number\numexpr
   \expandafter\itf@countvalues\expandafter0#1,\countvalues\@nnil
}% \countvalues
\def\itf@countvalues#1#2,#3{%
   \ifx\countvalues#3%
      +#1\expandafter\remove@to@nnil
   \else
      +1\expandafter\itf@countvalues
   \fi1#3%
}% \itf@countvalues
```

\itf@getvalue

```
\def\itf@getvalue #1{\romannumeral -‘\q
   \expandafter\itf@getv@lue \expandafter0#1,\itf@getvalue}
\def\itf@getv@lue#1#2\itf@getvalue #3{\itf@getv@lu@{#1}{#3-1}#2\itf@getvalue\@nnil}
\def\itf@getv@lu@#1#2#3,#4{%
   \ifnum \numexpr#1=\numexpr#2\relax
       #3\expandafter\remove@to@nnil
```

```
   \else\ifx\itf@getvalue#4\@empty
         \expandafter\expandafter
         \expandafter\remove@to@nnil
   \else \expandafter\expandafter
         \expandafter\itf@getv@lu@
   \fi\fi{#1+1}{#2}#4%
}% \itf@getv@lu@
```

21.12.2 \repeatcell

\repeatcell

```
\newif\ifitf@celltranspose
\newrobustcmd*\repeatcell{\begingroup \iffalse{\fi \ifnum0=‘}\fi \itf@repeatcell}
\newrobustcmd*\itf@repeatcell[3][]{%
   \ifblank{#1}% alignment option ?
      {\let\itf@makecell\@firstofone}
      {\def\itf@makecell##1{\noexpand\makecell[{#1}]{##1}}}%
   \countdef\itf@col=100% local
   \countdef\itf@row=101% local
   \countdef\itf@cnt=102% local
   \toksdef\itf@cell=1% local
   \itf@pgfkeys
   \pgfqkeys{/itf/makecell/repeatcell}{@reset={#2},#3}%
   \toks@{\ifnum0=‘{}\fi \endgroup}% local
   \ifnum\itf@row>\z@ % number
      \edef\itf@rowloop{\noexpand\@whilenum\itf@row<\the\itf@row}%
      \def\itf@cell@init{\def\r{\row}\let\R\@empty}%
   \else % list
      \def\itf@rowloop{\@for\r:=\itf@rows}%
      \expandafter\def\expandafter\itf@cell@init\expandafter{%
         \expandafter\def\expandafter\R\expandafter{%
            \expandafter\itf@getvalue\expandafter{\expandafter\@empty\itf@rows}}}%
   \fi
   \ifnum\itf@col>\z@ % number
      \edef\itf@colloop{\noexpand\@whilenum\itf@col<\the\itf@col}%
      \expandafter\def\expandafter\itf@cell@init\expandafter{%
         \itf@cell@init\def\c{\column}\let\C\@empty}%
   \else % list
      \def\itf@colloop{\@for\c:=\itf@cols}%
      \expandafter\expandafter\expandafter\def
         \expandafter\expandafter\expandafter\itf@cell@init
            \expandafter\expandafter\expandafter{%
               \expandafter\itf@cell@init
               \expandafter\def\expandafter\C\expandafter{%
                     \expandafter\itf@getvalue\expandafter{\expandafter\@empty\itf@cols}}}%
   \fi
   \itf@cell@init % in case they are used in formulas
   \ifitf@celltranspose
      \itf@col\z@
      \itf@colloop\do{%
         \ifnum\itf@col>\z@
         \pgfkeysifdefined{/itf/makecell/repeatcell/cr/row\the\itf@col}%
            {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr/row\the\itf@col}\itf@thecr}
            {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr}\itf@thecr}%
         \toks@\expandafter{\the\expandafter\toks@ \itf@thecr}%
         \fi
         \advance\itf@col\@ne
         \itf@row\z@
         \itf@rowloop\do{%
            \advance\itf@row\@ne
            \ifnum\itf@row>\@ne
               \toks@\expandafter{\the\toks@&}%
            \fi
```

```
2671            \toks@\expandafter{\the\expandafter\toks@ \itf@cell@init}%
2672            \itf@cell@insert}% rows loop
2673       }% cols loop
2674    \else
2675    \itf@row\z@
2676    \itf@rowloop\do{%
2677       \ifnum\itf@row>\z@
2678          \pgfkeysifdefined{/itf/makecell/repeatcell/cr/row\the\itf@row}%
2679             {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr/row\the\itf@row}\itf@thecr}
2680             {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr}\itf@thecr}%
2681          \toks@\expandafter{\the\expandafter\toks@ \itf@thecr}%
2682       \fi
2683       \advance\itf@row\@ne
2684       \itf@col\z@
2685       \itf@colloop\do{%
2686          \advance\itf@col\@ne
2687          \ifnum\itf@col>\@ne
2688             \toks@\expandafter{\the\toks@&}%
2689          \fi
2690          \toks@\expandafter{\the\expandafter\toks@ \itf@cell@init}%
2691          \itf@cell@insert}% cols loop
2692       }% rows loop
2693    \fi
2694    \itf@message{Code introduced by repeatcell in the \@currenvir:^^J
2695                 \the\toks@}% (to see the code...)
2696    \the\toks@ \ignorespaces
2697 }% \itf@repeatcell
```

\itf@message

```
2698 \let\itf@message \@gobble
```

Now the keys for \repeatcell:

```
2699 \def\itf@cell@rowcolkey{%
2700    \removefromstart\pgfkeyscurrentname{row}%
2701    \ifin@\else
2702       \removefromstart\pgfkeyscurrentname{col}%
2703    \fi
2704    \ifin@
2705       \itf@number\itf@cnt\pgfkeyscurrentname\relax\@nnil
2706          {\pgfkeyslet\pgfkeyscurrentkey\pgfkeyscurrentvalue}
2707          \in@false
2708    \fi
2709    \ifin@\else
2710       \pgfkeysvalueof{/errors/unknown key/.@cmd}\pgfkeyscurrentkey
2711                                                \pgfkeyscurrentvalue
2712                                                \pgfeov
2713    \fi
2714 }% \itf@cell@rowcolkey
2715 \pgfqkeys{/itf/makecell/repeatcell}{%
2716    font/.store in=\itf@cellfont,%
2717    font/.unknown/.code=\itf@cell@rowcolkey,%
2718    text/.store in=\itf@celltext,%
2719       text/.default=\ifdefined\C\C\column\fi,%
2720    text/.unknown/.code=\itf@cell@rowcolkey,%
2721    cr/.initial=\\,%
2722       cr/.default=\crcr,cr/.blank=\\,%
2723       end/.alias=cr,%
2724    cr/.unknown/.code=\itf@cell@rowcolkey,%
2725    rows/.code=\itf@number\itf@row#1\relax\@nnil
2726                  {\ifnum\itf@row<\z@\itf@row\@ne\fi}
2727                  {\itf@row\z@
2728                  \def\itf@rows{#1}\itf@expandonceifcs\itf@rows},%
2729       rows/.default=1,rows/.blank=1,%
2730    @cols/.is private=interfaces-makecell,%
```

```
2731    column/.is private=interfaces-makecell,%
2732    row/.is private=interfaces-makecell,%
2733    transpose/.is if=itf@celltranspose,%
2734    .unknown/.code=%
2735       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text \itf@cell@formulaerror{}\z@ \fi
2736       \ifx\pgfkeyscurrentvalue\@empty \itf@cell@formulaerror{}\@ne \fi
2737       \pgfkeysifdefined{\pgfkeyscurrentkey/@calc}%
2738             {\itf@cell@formulaerror{}\tw@}
2739             {\pgfkeyslet{\pgfkeyscurrentkey/@calc}\relax}%
2740       \itf@cell@getformula{#1}%
2741       \pgfkeysEaddvalue{/itf/makecell/repeatcell/@calc}{}
2742          {\the\toks@\expandafter\noexpand\csname\pgfkeyscurrentname\endcsname}%
2743       \expandafter\let\csname\pgfkeyscurrentname\endcsname\@undefined,%
2744    @reset/.code=% #1 are the columns
2745       \itf@celltransposefalse
2746       \let\itf@celltext\@empty
2747       \let\itf@cellfont\@empty
2748       \pgfkeyssetvalue{/itf/makecell/repeatcell/cr}{\\}%
2749       \itf@row\@ne
2750       \pgfkeyssetvalue{/itf/makecell/repeatcell/@calc}{%
2751          \itf@cell@numcalc\itf@col\column
2752          \itf@cell@numcalc\itf@row\row}%
2753       \itf@number\itf@col#1\relax\@nnil
2754          {\ifnum\itf@col<\z@\itf@col\@ne\fi}
2755          {\itf@col\z@
2756          \def\itf@cols{#1}\itf@expandonceifcs\itf@cols},%
2757 }% keys for \repeatcell
```

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

```
2758 \def\itf@cell@getformula#1{%
2759    \itf@cell@getf@rmula #1$$$\itf@cell@getformula$\relax\@nnil
2760    \expandafter\ifx\expandafter\toks@\the\toks@
2761       \itf@cell@formulaerror{#1}\thr@@
2762    \fi
2763 }% \itf@cell@getformula
2764 \def\itf@cell@getf@rmula #1$#2$#3$#4#5$#6{%
2765    \toks@{\toks@}%
2766    \ifx\itf@cell@getformula #4%
2767       \toks@{\itf@cell@numcalc{#1}}%
2768    \else\ifx $#4%
2769       \ifx\itf@cell@getformula #6%
2770          \ifdefined\pgfmathparse\else\itf@cell@formulaerror{#2}4\fi
2771          \toks@{\itf@cell@pgfcalc{#2}}%
2772       \else\ifx $#6%
2773          \ifdefined\FPeval\else\itf@cell@formulaerror{#3}5\fi
2774          \toks@{\itf@cell@FPcalc{#3}}%
2775       \fi\fi
2776    \fi\fi\remove@to@nnil
2777 }% \itf@cell@getf@rmula
2778 \def\itf@cell@formulaerror#1#2{%
2779    \def\itf@tp{#1}\@onelevel@sanitize\itf@tp
2780    \ifcase#2% 0
2781    \PackageError{interfaces-makecell}
2782       {Missing formula for key \pgfkeyscurrentname!}\@ehd
2783    \or %1
2784    \PackageError{interfaces-makecell}
2785       {Computed key \pgfkeyscurrentname\space wes left blank!}\@ehd
2786    \or %2
2787    \PackageError{interfaces-makecell}
2788       {Duplicate definition for computed key \pgfkeyscurrentname
2789       \MessageBreak\string\repeatcell\space will redefine the key}\@eha
2790    \or %3
2791    \PackageError{interfaces-makecell}
```

```
2792       {Incorrect formula in \string\repeatcell
2793       \MessageBreak Check: \itf@tp
2794       \MessageBreak Take care of commas and equal signs...}\@ehd
2795    \or %4
2796    \PackageError{interfaces-makecell}
2797       {Formula: \itf@tp
2798       \MessageBreak requires \string\pgfmathparse:\space\string\usetikz{pgfmath}}\@ehd
2799    \or %5
2800    \PackageError{interfaces-makecell}
2801       {Formula: \itf@tp
2802       \MessageBreak requires \string\FPeval:\space\string\usepackage{fp}}\@ehd
2803    \else
2804    \PackageError{interfaces-makecell}
2805       {Impossible value!}\@ehd
2806    \fi
2807 }% \itf@cell@formulaerror
```

\itf@cell@calc
\itf@cell@numcalc
\itf@cell@pgfcalc
\itf@cell@FPcalc

```
\protected\def\itf@cell@calc#1#2{%
   \edef#1{\def\noexpand#1{#2}}%
   \toks@\expandafter{\the\expandafter\toks@ #1}%
   #1%
}% \itf@cell@calc
\protected\def\itf@cell@numcalc#1#2{%
   \itf@cell@calc#2{\number\numexpr#1}%
}% \itf@cell@numcalc
\protected\def\itf@cell@pgfcalc#1#2{%
   \pgfmathparse{#1}%
   \itf@cell@calc#2\pgfmathresult
}% \itf@cell@pgfcalc
\protected\def\itf@cell@FPcalc#1#2{%
   \begingroup
   \hfuzz\maxdimen \vfuzz\hfuzz \hbadness\@M \vbadness\hbadness
   \everypar{}\tracinglostchars\z@
   \setbox\z@\vbox{%\FPeval introduces some weird code, hence the calculation in a \vbox
      \FPeval\FPresult{#1}%
   \expandafter}\expandafter\endgroup
   \expandafter\itf@cell@calc\expandafter#2\expandafter{\FPresult}%
}% \itf@cell@FPcalc
```

\itf@cell@insert

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

```
\def\itf@cell@getifdefined#1#2{%
   \pgfkeysifdefined{/itf/makecell/repeatcell/#1}
      {\pgfkeysgetvalue{/itf/makecell/repeatcell/#1}#2}
      {\let#2\@empty}%
}%
\def\itf@cell@insert{%
   \pgfkeysvalueof{/itf/makecell/repeatcell/@calc}%
   \ifx\R\@empty\else
      \toks@\expandafter{\the\expandafter\toks@
         \expandafter\def\expandafter\r\expandafter{\r}}%
   \fi
   \ifx\C\@empty\else
      \toks@\expandafter{\the\expandafter\toks@
         \expandafter\def\expandafter\c\expandafter{\c}}%
   \fi
   \itf@cell@getifdefined{font/row\the\itf@row}\itf@cellfontrow
   \itf@cell@getifdefined{font/col\the\itf@col}\itf@cellfontcol
   \itf@cell@getifdefined{text/row\the\itf@row}\itf@cellrow
   \itf@cell@getifdefined{text/col\the\itf@col}\itf@cellcol
   \toks@\expandafter{\the\expandafter\toks@ \itf@cellfont}%
   \ifx\itf@cellrow\@empty
      \ifx\itf@cellcol\@empty
         \itf@cell\expandafter\expandafter\expandafter{%
            \expandafter\itf@cellfontcol \itf@cellfontrow}%
         \let\itf@tp\itf@celltext
      \else
         \itf@cell\expandafter{\itf@cellfontcol}%
         \let\itf@tp\itf@cellcol
      \fi
   \else
      \ifx\itf@cellcol\@empty
         \itf@cell\expandafter{\itf@cellfontrow}%
         \let\itf@tp\itf@cellrow
      \else
         \itf@cell{}%
         \ifitf@celltranspose
         \edef\itf@tp{\noexpand\itf@diaghead(-2,1)%
            {\expandonce\itf@cellfontrow\expandonce\itf@cellrow}
            {\expandonce\itf@cellfontcol\expandonce\itf@cellcol}}%
```

```
2868          \else
2869          \edef\itf@tp{\noexpand\itf@diaghead(-2,1)%
2870             {\expandonce\itf@cellfontcol\expandonce\itf@cellcol}
2871             {\expandonce\itf@cellfontrow\expandonce\itf@cellrow}}%
2872          \fi
2873       \fi
2874    \fi
2875    \itf@cell\expandafter{\the\expandafter\itf@cell \itf@tp}%
2876    \edef\itf@tp{\itf@makecell{\the\itf@cell}}%
2877    \toks@\expandafter{\the\expandafter\toks@ \itf@tp}%
2878 }% \itf@cell@insert
```

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

```
2879 \def\itf@diaghead(#1)#2#3{%
2880    \begingroup
2881    \edef\itf@tp{\endgroup
2882    \noexpand\diaghead({#1}){\unexpanded{#2 #3}}%
2883                    {\unexpanded{#2}}
2884                    {\unexpanded{#3}}%
2885    }\itf@tp
2886 }% \itf@diaghead
```

21.12.3 colortbl: patch for `\CT@cellc`

`\CT@cellc`

```
2887 \AfterPackage*{colortbl}{%
2888 \def\CT@cellc#1[#2]#3{%  #1 is either \@firstofone or \@gobble, [#2]#3 = color spec
2889    \xdef\CT@cell@color{\noexpand\CT@color#1{[{#2}]}{#3}%
2890    \global\let\noexpand\CT@cell@color\relax}%
2891 }}
```

```
2892 ⟨/makecell⟩
```

21.13 † Interface ☞ enumitem : `\setlist`

```
2893 ⟨*enumitem⟩
2894 \ProvidesPackage{interfaces-enumitem}
2895    [2011/02/19 v3.1 more control on lists (FC)]
2896 \RequirePackage{interfaces-base}
2897 \itf@Check@Package{enumitem}
```

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

```
2898 \providerobustcmd*\interitem{%
2899    \item[]\hskip-\leftmargin
2900 }% \interitem
```

`\Key first= as alias to key start=` A new key `first` is defined in the enumitem family. This is just an alias for the key `start` which sets the first number in an `enumerate` list.

```
2901 \define@key{enumitem}{first}[\@ne]{\setkeys{enumitem}{start={#1}}}
```

`\setlist (extension, star form)`

```
2902 \renewrobustcmd*\setlist{\begingroup \@ifstar
2903    {\let\do\csgappto \itf@setlist}
2904    {\let\do\csgdef   \itf@setlist}%
2905 }% \setlist
2906 \newrobustcmd*\itf@setlist[2][0]{%
2907    \let\enit@a\@empty
2908    \let\enit@b\@empty
2909    \@for\x:=#1\do{%
2910       \ifx\x\@empty\else
2911          \itf@number\count@\x\relax\@nnil
2912             {\edef\enit@b{\enit@b,\the\count@}}
2913             {\edef\enit@a{\enit@a,\x}}%
```

```
      \fi}%
   \ifx\enit@a\@empty\def\enit@a{list}\fi
   \ifx\enit@b\@empty\def\enit@b{0}\fi
   \@for\a:=\enit@a\do{%
      \ifx\a\@empty\else
      \@for\b:=\enit@b\do{%
         \ifx\b\@empty\else
         \ifcsundef{end\a}
            {\expandafter\itf@setlist@error\expandafter{\a}}
            {\do{enit@@\a\romannumeral\b}{,#2}}%
         \fi}%
      \fi}
   \endgroup
}% \itf@setlist
\def\itf@setlist@error#1{%
   \PackageError{interfaces-enumitem}
      {Environment `#1' is undefined
      \MessageBreak Use \string\newlist\space before \string\setlist
      \MessageBreak Your command will be ignored}\@eha
}% \itf@setlist@error
```

⟨/enumitem⟩

21·14 † Interface ☞ truncate

⟨*truncate⟩

```
\ProvidesPackage{interfaces-truncate}
```

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

```
\newrobustcmd\trunctext[3][\TruncateMarker]{% do nothing if width of #3 is less than #2
   \begingroup
      \hbadness\maxdimen\hfuzz\vsize
      \setbox\z@=\hbox to\dimexpr#2\relax\bgroup\color@begingroup
                                          \ignorespaces#3\unskip
                                          \color@endgroup\egroup
      \ifnum\badness>\@M \truncate[{#1}]{#2}{#3}%
%%            \def\next{\truncate[{#1}]{#2}{#3}}%
      \else #3%\def\next{#3}%
      \fi
   \endgroup
}% \trunctext
```

\htruncadjust

```
\newrobustcmd\htruncadjust[1]{\@testopt
   {\itf@htruncadjust{#1}}{}%
}% \htruncadjust
\long\def\itf@htruncadjust#1[#2]#3{%#1=total width, #2=[x_1..x_n], #3=text_1..text_n
   \begingroup
   \let\itf@trunc@width\@empty
   \let\itf@istruncated\@gobble % to remove the first comma
   \let\the@dimen\relax
   \count@\z@  \dimen@\z@
   \ifblank{#2}% no optional [x_1,...,x_n] parameters
      {%
         \@for\x:=#3\do{%
            \advance \count@ \@ne
            \setbox\z@\hbox\bgroup\color@begingroup
                              \ignorespaces\x\unskip
                           \color@endgroup\egroup
            \dimen\count@ = \wd\z@
            \toks\count@\expandafter{\the\dimen\count@}%
            \advance\dimen@ \dimen\count@}%
      }
      {%
         \@for\x:=#2\do{%
```

```
            \advance \count@ \@ne
            \toks\count@\expandafter{\x\p@}%
            \advance\dimen@ \x\p@
            \dimen\count@ -\@ne\p@}%
      }%
   \advance\count@\@ne \dimendef\itf@freespace=\count@
   \advance\count@\@ne \dimendef\itf@tempdim=\count@
   \advance\count@\@ne \dimendef\itf@sum=\count@
   \count@\z@
   \itf@freespace\z@ % free space left when   w_i < x_i/sum(x_i) * total
   \@for\x:=#3\do{%
      \advance \count@ \@ne
      \ifdim\dimen@=\z@ \else
         \ifdim \dimen\count@<\z@ % not measured before
               \setbox\z@\hbox\bgroup\color@begingroup
                                  \ignorespaces\x\unskip
                                 \color@endgroup\egroup
               \dimen\count@ = \wd\z@
         \fi
         \itf@tempdim = \itf@scaledimen{#1}*\the\toks\count@/\dimen@\relax
         \ifdim \dimen\count@ > \itf@tempdim
               \dimen\count@ = \itf@tempdim
               \edef\itf@istruncated{\itf@istruncated,\the\count@}%
               \advance\itf@sum by\the\toks\count@
         \else
            \advance\itf@freespace \itf@tempdim
            \advance\itf@freespace -\dimen\count@
         \fi
      \fi
      \edef\itf@trunc@width{\itf@trunc@width\the\count@{\the@dimen\the\count@}}%
   }%
%%   Free space=\the\itf@freespace\par
   \ifdim\itf@freespace > \z@ % reinsert free space proportionally
      \ifx\itf@istruncated\@gobble\else
      \@for\x:=\itf@istruncated\do{%
         \advance\dimen\x by\itf@scaledimen\itf@freespace*\the\toks\x/\itf@sum\relax
      }%
   \fi\fi
   \def\the@dimen{\the\dimen}%
   \edef\itf@trunc@width{\itf@trunc@width}%
   \expandafter\endgroup
      \expandafter\def
         \expandafter\itf@trunc@width
               \expandafter{\itf@trunc@width}%
%%   total=\the\dimexpr#1\relax
}% \itf@htruncadjust
\def\itf@scalefactor#1#2{\strip@pt\dimexpr#1*65536/#2\relax}
\def\itf@scaledimen#1*#2/#3\relax{%
   \dimexpr\itf@scalefactor{#2}{#3}\dimexpr#1\relax\relax
}% \itf@scaledimen
```

\htruncwidth

```
\newcommand*\htruncwidth[1]{% purely expandable
   \expandafter\itf@htruncwidth\itf@trunc@width\relax\relax\@nnil{#1}%
}% \htruncwidth
\def\itf@htruncwidth#1#2#3\@nnil#4{%
   \ifx\relax#1\itf@trunc@nosuchwidth{#4}%
   \else\ifnum#1=#4
      #2%
   \else
      \itf@htruncwidth#3\@nnil{#4}%
   \fi\fi
}% \itf@htruncwidth
\def\itf@trunc@nosuchwidth#1{%
```

```
3033    \PackageError{interfaces-truncate}
3034       {You requested the width for text nr#1
3035       \MessageBreak but there is no such text
3036       \MessageBreak Therefore no such width!}\@ehd
3037 }% \itf@trunc@nosuchwidth
```

3038 ⟨/truncate⟩

21·15 † Interface ☞ appendix and the appendices environment

```
3039 ⟨*appendix⟩
3040 \ProvidesPackage{interfaces-appendix}
3041    [2011/02/19 v3.1 easy control of appendices environment (FC)]
3042 \RequirePackage{interfaces-base}
3043 \itf@Check@Package{appendix}
```

\appendices

```
3044 \let\itf@appendices@pp\appendices
3045 \let\itf@endappendices@pp\endappendices
3046 \let\itf@appendices@pp\appendices
3047 \let\itf@endappendices@pp\endappendices
3048 \renewenvironment{appendices}[1][]{%
3049    \pgfqkeys{/itf/appendix/appendices}{#1}%
3050    \itf@appendices@pp
3051    }
3052    {\itf@endappendices@pp}%

3053 \pgfqkeys{/itf/appendix/appendices}{%
3054    title/.store as code in cs=appendixpagename,%
3055       title/.append code=\ifx\appendixpagename\@empty \@dopage@ppfalse
3056                          \else \@dopage@pptrue\fi,%
3057       title/.value required,%
3058    intoc/.is if=@dotoc@pp,%
3059    intoc/title/.store as code in cs=appendixtocname,%
3060       intoc/title/.append code=\ifx\appendixtocname\@empty \@dotoc@ppfalse
3061                                  \else \@dotoc@pptrue\fi,%
3062       intoc/title/.default=\pgfkeysvalueof{/itf/appendix/appendices/title},%
3063    section/.is enum={section,chapter},%
3064       section/.append code={\@chapter@ppfalse
3065          \ifnum\pgfkeysvalueof{/itf/appendix/appendices/section/.number}=\z@
3066          \else \ifundef\chapter
3067             {\PackageWarning{interfaces-appendix}
3068                {You asked chapter-style appendices but your
3069                \MessageBreak current class does not provide chapters!}}
3070             \@chapter@pptrue
3071          \fi},%
3072    chapter/.style={section=chapter},%
3073       chapter/.value forbidden,%
3074 }% keys for appendices environment
```

3075 ⟨/appendix⟩

21·16 † Interface ☞ embedfile : \embedthisfile

```
3076 ⟨*embedfile⟩
3077 \ProvidesPackage{interfaces-embedfile}
3078    [2011/02/19 v3.1 easy macros to embed files into pdf (FC)]
3079 \RequirePackage{interfaces-base}
3080 \itf@Check@Package{embedfile}
3081 \newrobustcmd*\embedthisfile{\@ifstar
3082    \embedthisfile@main
3083    \embedthisfile@all
3084 }% \embedthisfile
3085 \@onlypreamble\embedthisfile
3086 \def\embedthisfile@main{\embedfile{\jobname.tex}}
```

```
\def\embedthisfile@all{%
   \embedthisfile@main
   \AfterPreamble{%
      \ltx@ifundefined{@listfiles}
         {\let\@listfiles \@empty}% to avoid: \global\let\@filelist\relax in \document
         {}%
   }%
   \gpreto\@enddocumenthook{%
      \let\do \itf@EmbedOne
      \expandafter\docsvlist\expandafter{\@filelist}%
   }%
}% \embedthisfile@all
\def\itf@EmbedOne#1{\itf@Embed@ne#1.tex\@nil}
\def\itf@Embed@ne#1.tex#2\@nil{%
   \ltx@ifundefined{cp@#1}
      {}
      {\ifblank{#2}
         {}
         {\embedfile{#1.tex}}}%
}% \itf@Embed@ne
⟨/embedfile⟩
```

21·17 † Interface ☞ environ

```
⟨*environ⟩
\ProvidesPackage{interfaces-environ}
   [2011/02/19 v3.1 ReNewEnviron = RenewEnviron (FC)]
\RequirePackage{interfaces-base}
\AfterPackage{environ}{
   \ifundef\ReNewEnviron
      {\let\ReNewEnviron\RenewEnviron}
      {}%
}%
⟨/environ⟩
```

21·18 † Interface umrand

```
⟨*umrand⟩
\ProvidesPackage{interfaces-umrand}
   [2011/02/19 v3.1 patch for umrand.sty ifnotempty (FC)]
\RequirePackage{interfaces-base}
\BeforePackage{umrand}{%
   \let\itf@newif\newif
   \def\itf@tp{\ifnotempty}%
   \def\newif#1{\def\x{#1}\ifx\x\itf@tp \expandafter\@gobble
      \else\expandafter\ltx@newif\fi{#1}}%
}
\AfterPackage{umrand}{%
   \let\newif\itf@newif
   \let\itf@newif\@undefined
}
⟨/umrand⟩
```

21·19 † Interface ☞ scrlfile

```
⟨*scrlfile⟩
\ProvidesPackage{interfaces-scrlfile}
   [2011/02/19 v3.1 scrlfile hooks improved (FC)]
\RequirePackage{interfaces-base}
```

\@pkgextension
\@clsextension

In LaTeX they are defined `\@onlypreamble`. So we use the ltxcmds equivalents:

```
\AfterEndPreamble{%
   \let\@pkgextension\ltx@pkgextension
   \let\@clsextension\ltx@clsextension
   \let\@ifpackageloaded\ltx@ifpackageloaded
```

```
3141    \let\@ifclassloaded\ltx@ifclassloaded
3142 }
```

\scr@load@hook

```
3143 \renewrobustcmd*\scr@load@hook[2]{%
3144    \csuse{#2-@#1}%
3145    \ifcsname#2-@#1-\string\keep\endcsname\else\global\csundef{#2-@#1}\fi
3146 }% \scr@load@hook
```

\scr@set@load@hook (optimisation)

```
3147 \renewrobustcmd*\scr@set@load@hook[2]{\csgappto{#2-@#1}}
```

\BeforeFile
\AfterFile

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

```
3148 \renewrobustcmd*\BeforeFile{\@ifstar
3149    {\itf@s@LoadFile{before}}
3150    {\itf@LoadFile{before}}%
3151 }% \BeforeFile
3152 \renewrobustcmd*\AfterFile{\@ifstar
3153    {\itf@s@LoadFile{after}}
3154    {\itf@LoadFile{after}}%
3155 }% \AfterFile

3156 \def\itf@s@LoadFile#1#2{%
3157    \global\cslet{#2-@#1-\string\keep}\@empty
3158    \scr@set@load@hook{#1}{#2}%
3159 }% \itf@s@LoadFile
3160 \def\itf@LoadFile#1#2{%
3161    \global\csundef{#2-@#1-\string\keep}%
3162    \scr@set@load@hook{#1}{#2}%
3163 }% \itf@LoadFile
```

\@input (patch)

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

```
3164 \renewcommand*\@input[1]{\IfFileExists{#1}
3165    {\scr@load@hook{before}{#1}%
3166     \@@input\@filef@und
3167     \scr@load@hook{after}{#1}}%
3168    {\typeout{No file #1.}}%
3169 }% \@input
```

3170 ⟨/scrlfile⟩

21.20 † Interface pgfkeys (☞pgfmanual)

```
3171 ⟨*pgfkeys⟩
3172 \ProvidesPackage{interfaces-pgfkeys}
3173    [2011/02/19 v3.1 pgfkeys handlers definitions (FC)]
3174 \RequirePackage{interfaces-base}
3175 \ifdefined\pgfkeys@ifexecutehandler % pgf version 2.1
3176 \def\itf@pgfkeys{%
3177    \global\let\pgfkeys@unpack       \itf@pgfkeys@unpack
3178    \global\let\pgfkeys@case@three   \itf@pgfkeys@case@three
3179    \global\let\pgfkeys@case@three@handleall\itf@pgfkeys@case@three@handleall
3180 }% \itf@pgfkeys
3181 \else
3182 \def\itf@pgfkeys{%
3183    \global\let\pgfkeys@unpack       \itf@pgfkeys@unpack
3184    \global\let\pgfkeys@case@three   \itf@pgfkeys@case@three
3185    \global\let\pgfkeysaddvalue      \itf@pgfkeysaddvalue
3186    \global\let\pgfkeys@exp@call     \itf@pgfkeys@exp@call
3187 }% \itf@pgfkeys
3188 \fi
3189 \AtBeginDocument{\itf@pgfkeys \let\itf@pgfkeys \relax}
```

Some new pgfkeys macros

\pgfkeysmeaning

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

\pgfkeysvalueof@unexpanded

```
\def\pgfkeysvalueof@unexpanded#1{%
   \unexpanded\expandafter\expandafter\expandafter{%
                          \csname pgfk@#1\endcsname}%
}% \pgfkeysvalueof@unexpanded
```

Some pgfkeys macros redefinition/corrections

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

```
\ifdefined\pgfkeys@ifexecutehandler \else % pgf v2.1: bug fixed
\def\itf@pgfkeysaddvalue#1#2#3{% (pgf v2.0: bug in pgfkeys.code.tex)
   \edef\pgfkeys@global@temp{%
      \unexpanded{#2}%
      \ifcsname pgfk@#1\endcsname
         \unexpanded\expandafter\expandafter\expandafter{%
                          \csname pgfk@#1\endcsname}%
      \fi
      \unexpanded{#3}}%
   \pgfkeyslet{#1}\pgfkeys@global@temp
}% \itf@pgfkeysaddvalue
\fi
```

\pgfkeysEsetvalue
\pgfkeysEaddvalue

```
\ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf version 2.1
\def\pgfkeysEsetvalue#1#2{%
   \expandafter\edef\csname pgfk@#1\endcsname{#2}%
}% \pgfkeysEsetvalue
\ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf v2.1
\def\pgfkeysEaddvalue#1#2#3{% \csepreappto{pgfk@#1}{#2}{#3}
   \edef\pgfkeys@global@temp{%
      #2%
      \ifcsname pgfk@#1\endcsname
         \unexpanded\expandafter\expandafter\expandafter{%
            \csname pgfk@#1\endcsname}%
      \fi
      #3}%
   \pgfkeyslet{#1}\pgfkeys@global@temp
}% \pgfkeysEaddvalue
```

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

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

Handlers /.blank

```
%% The value is now checked by \itf@pgfkeys@default@blank@required:
\ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf v2.1
\def\itf@pgfkeys@unpack#1=#2=#3\pgfkeys@stop{%
  \pgfkeys@spdef\pgfkeyscurrentkey{#1}%
  \edef\pgfkeyscurrentkey{\pgfkeyscurrentkey}%
  \ifx\pgfkeyscurrentkey\pgfkeys@empty
    % Skip
  \else%
```

```
    \pgfkeys@add@path@as@needed
    \pgfkeys@spdef\pgfkeyscurrentvalue{#2}%
    \itf@pgfkeys@default@blank@required % <FC>
                    \pgfkeyscurrentkey % <FC>
                     \pgfkeys@case@one % <FC>
  \fi
}% \itf@pgfkeys@unpack
```

\itf@pgfkeys@default@blank@required Handle the case: /.@def ⟶ /.@blank ⟶ /.@def ...

```
\def\itf@pgfkeys@default@blank@required#1#2{%
   \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text% Hmm... no value
      \pgfkeysifdefined{#1/.@def}%
         {\pgfkeysgetvalue{#1/.@def}\pgfkeyscurrentvalue}
         {}% no default, so leave it
   \fi
   \ifx\pgfkeyscurrentvalue\@empty
      \pgfkeysifdefined{#1/.@blank}
         {\pgfkeysgetvalue{#1/.@blank}\pgfkeyscurrentvalue}
         {}% no /.blank specified
   \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text% in case /.blank -> \pgfkeysnovalue
      \pgfkeysifdefined{#1/.@def}%
         {\pgfkeysgetvalue{#1/.@def}\pgfkeyscurrentvalue}
         {}% no default, so leave it
   \fi\fi
   \ifx\pgfkeyscurrentvalue\pgfkeysvaluerequired
      \pgfkeysvalueof{/errors/value required/.@cmd}\pgfkeyscurrentkey
                                                   \pgfkeyscurrentvalue
                                                   \pgfeov
   \else
      #2%
   \fi
}% \itf@pgfkeys@default@blank@required
```

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

```
%% To handle the cases of: /handler/.default= /handler/.blank= /handler/.value required,
%% it is necessary to redefine \pgfkeys@case@three
\def\itf@pgfkeys@case@three{%
   \pgfkeys@split@path
   \pgfkeysifdefined{/handlers/\pgfkeyscurrentname/.@cmd}
      {%
      \itf@pgfkeys@default@blank@required{/handlers/\pgfkeyscurrentname}%
         {\pgfkeysgetvalue{/handlers/\pgfkeyscurrentname/.@cmd}\pgfkeys@code
          \expandafter\pgfkeys@code\pgfkeyscurrentvalue\pgfeov}%
      }
     \pgfkeys@unknown % no handler, thus the key is unknown
}% \itf@pgfkeys@case@three
\ifdefined\pgfkeys@ifexecutehandler
   \let\itf@pgfkeys@case@three@handleall \itf@pgfkeys@case@three
\fi
```

Loading interfaces modifications for pgfkeys

```
\itf@pgfkeys
```

Handler definition: /.alias, /.blank

```
\pgfkeys{%
   /handlers/.alias/.code=\itf@pgfkeys@ifaliasexists{#1}{%
      \pgfkeysedef\pgfkeyscurrentpath{%
                  \noexpand\pgfkeysalso{\pgfkeysdefaultpath#1={##1}}}},%
      /handlers/.alias/.value required,%
```

```
   /handlers/.blank/.code=\pgfkeyssetvalue{\pgfkeyscurrentpath/.@blank}{#1},%
      /handlers/.blank/.default=\pgfkeysnovalue,%
}% /.alias   and  /.blank
\def\itf@pgfkeys@ifaliasexists#1#2{%
   \pgfkeysifdefined{\pgfkeysdefaultpath#1/.@cmd}{#2}
      {\pgfkeysifdefined{\pgfkeysdefaultpath#1}
         {#2}
         {\itf@pgfkeys@aliaserror{#1}}}%
}% \itf@pgfkeys@ifaliasexists
\def\itf@pgfkeys@aliaserror#1{%
   \PackageError{interfaces-pgfkeys}
      {You want the key \pgfkeyscurrentpath\space
      \MessageBreak to be an alias for \pgfkeysdefaultpath#1
      \MessageBreak but the key \pgfkeysdefaultpath#1
      \MessageBreak is not defined!}\@eha\@gobble
}% \itf@pgfkeys@aliaserror
```

Handler 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).

```
\pgfkeys{
   /handlers/.alias*/.code=\itf@pgfkeys@ifaliasexists{#1}{%
      \pgfkeysedef\pgfkeyscurrentpath{\noexpand\pgfkeysalso{\pgfkeysdefaultpath#1={##1}}}%
      \@tfor\x:=+-*\do{%
         \pgfkeysifdefined{\pgfkeysdefaultpath#1\x/.@cmd}
            {\pgfkeysedef{\pgfkeyscurrentpath\x}{%
               \noexpand\pgfkeysalso{\pgfkeysdefaultpath#1\x={##1}}}}
            {}%
      }},%
   /handlers/.alias*/.value required,%
}% /.alias*
```

Handler definition: /.is private

```
\pgfkeys{%
   /handlers/.is private/.code=\pgfkeysdef\pgfkeyscurrentpath{%
      \PackageError{#1}{Key \pgfkeyscurrentkey\space is private
      \MessageBreak and should not be modified}\@ehd},%
   /handlers/.is private to class/.code=\pgfkeysdef\pgfkeyscurrentpath{%
      \ClassError{#1}{Key \pgfkeyscurrentkey\space is private
      \MessageBreak and should not be modified}\@ehd}%
}% /.is private
```

Handlers definition: /.true /.false /.on /.off

```
\def\itf@pgfkeys@choice[#1]#2#3{%
   \pgfkeys{\pgfkeyscurrentpath/.cd,%
      .is choice,%
      #2/.code={#3},%
      .default/.expanded=\@firstoftwo#1}%
}% \itf@pgfkeys@choice
\pgfkeys{%
   /handlers/.true/.code=\itf@pgfkeys@choice[{true}{false}]{true}{#1},%
   /handlers/.false/.code=\itf@pgfkeys@choice[{true}{false}]{false}{#1},%
   /handlers/.on/.code=\itf@pgfkeys@choice[{on}{off}]{on}{#1},%
   /handlers/.off/.code=\itf@pgfkeys@choice[{on}{off}]{off}{#1},%
}% /.true /.false
```

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

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

Handler definition: /.store as code

```
%% /.store as code handlers
\pgfkeys{%
   /handlers/.store as code/.code={%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
      \pgfkeyslet\pgfkeyscurrentpath\@empty
      \pgfkeyslet{\pgfkeyscurrentpath/.@def}\@empty
      \@tfor\x:=#1\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
               \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
               \noexpand\unexpanded{##1}}}}%
      \pgfkeyslet{\pgfkeyscurrentpath\x/.@def}\@empty
      }},%
   /handlers/.store as code/.default=*+,%
}% /.store as code
```

Handler definition: /.estore as code

```
\pgfkeys{%
   /handlers/.estore as code/.code={%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \noexpand\pgfkeysEsetvalue{\pgfkeyscurrentpath}{##1}}%
      \pgfkeyslet\pgfkeyscurrentpath\@empty
      \@tfor\x:=#1\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
               \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
               \noexpand\unexpanded{##1}}}}%
      }},%
   /handlers/.estore as code/.default=*+,%
}% /.estore as code
```

Handler definition: /.store as code in cs=⟨*cs-name*⟩

```
\pgfkeys{%
   /handlers/.store as code in cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\csdef{#1}{##1}\fi}%
      \@tfor\x:=*+\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
               \noexpand\ifcsname#1\endcsname
                  \noexpand\expandafter\noexpand\expandonce
                     \noexpand\csname#1\endcsname
               \noexpand\fi
               \noexpand\unexpanded{##1}}}}%
         \pgfkeyslet{\pgfkeyscurrentpath\x/.@def}\@empty
      }},%
   /handlers/.store as code in cs/.value required,%
}% /.store as code in cs
\pgfkeys{%
   /handlers/.estore as code in cs/.code={%
```

```
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\csedef{#1}{##1}\fi}%
      \@tfor\x:=*+\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
               \noexpand\ifcsname#1\endcsname
                  \noexpand\expandafter\noexpand\expandonce
                        \noexpand\csname#1\endcsname
               \noexpand\fi
               \noexpand\unexpanded{##1}}}}%
      }},%  default if \pgfkeysnovalue which expands to \@empty
   /handlers/.estore as code in cs/.value required,%
}% /.estore as code in cs
```

Handler definition: /.store as color

```
\protected\def\itf@pgfk@color#1#2\@nil{%
   \ifx\@let@token\color
      \def\pgfkeyscurrentvalue{#2}%
   \else\ifx\@let@token\normalcolor
      \def\pgfkeyscurrentvalue{default}%
   \else\ifx\@let@token\pgfkeysnovalue
      \def\pgfkeyscurrentvalue{default}%
   \fi\fi\fi
}% \itf@pgfk@color
\pgfkeys{%
   /handlers/.store as color/.code=%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \futurelet\noexpand\@let@token\itf@pgfk@color
                        ##1\noexpand\pgfkeysnovalue\noexpand\@nil
         \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
}% /.store as color
```

Handler definition: /.store as color in cs=⟨cs-name⟩

```
\pgfkeys{%
   /handlers/.store as color in cs/.code=%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \futurelet\noexpand\@let@token\itf@pgfk@color
                        ##1\noexpand\pgfkeysnovalue\noexpand\@nil
         \cslet{#1}\noexpand\pgfkeyscurrentvalue}%
}% /.store as color in cs
```

Handler definition: /.store as color command

```
\protected\def\itf@pgfk@colorcmd#1\@nil{%
   \ifcat @\noexpand\@let@token
      \def\pgfkeyscurrentvalue{\color{#1}}%
   \else\ifcat 0\noexpand\@let@token
      \def\pgfkeyscurrentvalue{\color{#1}}%
   \else\ifx\@let@token\@nil
      \let\pgfkeyscurrentvalue\normalcolor
   \fi\fi\fi
}% \itf@pgfk@colorcmd
\pgfkeys{%
   /handlers/.store as color command/.code=%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \futurelet\noexpand\@let@token\itf@pgfk@colorcmd
                        ##1\noexpand\@nil
         \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
      \pgfkeyssetvalue{\pgfkeyscurrentpath/.@def}\normalcolor
}% /.store as color command
```

Handler definition: /.store as color command in cs=⟨cs-name⟩

```
\pgfkeys{%
   /handlers/.store as color command in cs/.code=%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \futurelet\noexpand\@let@token\itf@pgfk@colorcmd
                        ##1\noexpand\@nil
         \cslet{#1}\noexpand\pgfkeyscurrentvalue}%
      \pgfkeyssetvalue{\pgfkeyscurrentpath/.@def}\normalcolor
}% /.store as color command in cs
```

Handler definition /.store as number

```
\pgfkeys{%
   /handlers/.store as number/.code={%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\numexpr##1\relax}}%
      \pgfkeyslet\pgfkeyscurrentpath\z@
      \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
      \@tfor\x:=#1\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded=%
               \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
               \x
               \numexpr\unexpanded{##1}\relax}}%
         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
      }},%
   /handlers/.store as number/.default=+-*,%
}% /.store as number
```

/.store as number in cs Handler definition: /.store as number in cs

```
\pgfkeys{%
   /handlers/.store as number in cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\csdef{#1}{\numexpr##1\relax}\fi}%
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
      \@tfor\x:=+-*\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \letcs\noexpand\pgfkeys@temp{%
               \noexpand\ifcsname#1\endcsname
                  #1\noexpand\else\if*\x @ne\else z@\fi\noexpand\fi}%
         \edef\noexpand\pgfkeys@temp{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath={%
               \noexpand\expandonce\noexpand\pgfkeys@temp
               \x
               \numexpr\noexpand\unexpanded{##1}\relax}}%
         }\noexpand\pgfkeys@temp}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
   }},%
   /handlers/.store as number in cs/.value required,%
}% /.store as number in cs
```

Handler definition: /.estore as number

```
\pgfkeys{%
   /handlers/.estore as number/.code={%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{%
                     \noexpand\number\numexpr##1\relax}}%
      \pgfkeyslet\pgfkeyscurrentpath\z@
      \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
      \@tfor\x:=#1\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
               \noexpand\pgfkeysvalueof{\pgfkeyscurrentpath}%
               \x
               \numexpr##1\relax}}%
      }},%
   /handlers/.estore as number/.default=+-*,%
}% /.estore as number
```

Handler definition: /.estore as number in cs

```
\pgfkeys{%
   /handlers/.estore as number in cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\csedef{#1}{\number\numexpr##1\relax}\fi}%
   \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
   \@tfor\x:=+-*\do{%
      \pgfkeysedef{\pgfkeyscurrentpath\x}{%
         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
            \noexpand\csname\noexpand\ifcsname#1\endcsname
               #1\noexpand\else\if*\x @ne\else z@\fi\noexpand\fi\endcsname
            \x
            \numexpr##1\relax}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
   }},%
   /handlers/.estore as number in cs/.value required,%
}% /.estore as number in cs
```

Handler definition: /.store in counter cs /.store in count cs is exactly the same.

```
\pgfkeys{%
   /handlers/.store in counter cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\csname#1\endcsname\numexpr##1\relax\fi}%
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
   \@tfor\x:=+-*\do{%
      \pgfkeysedef{\pgfkeyscurrentpath\x}{%
         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
            \noexpand\csname\noexpand\ifcsname#1\endcsname
            #1\noexpand\else\if*\x @ne\else z@\fi\noexpand\fi\endcsname
            \x
            \numexpr##1\relax}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\@ne\else\z@\fi}%
   }},%
   /handlers/.store in counter cs/.value required,%
}% /.store in counter cs
\pgfkeys{%
   /handlers/.store in count cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
```

```
3546          \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3547          \else\csname#1\endcsname\numexpr##1\relax\fi}%
3548       \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3549    \@tfor\x:=+-*\do{%
3550       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3551          \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3552             \noexpand\csname\noexpand\ifcsname#1\endcsname
3553             #1\noexpand\else\if*\x @ne\else z@\fi\noexpand\fi\endcsname
3554             \x
3555             \numexpr##1\relax}}%
3556       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
3557       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\@ne\else\z@\fi}%
3558    }},%
3559    /handlers/.store in count cs/.value required,%
3560 }% /.store in count cs
```

Handlers definition: /.store as glue

```
3561 \pgfkeys{%
3562    /handlers/.store as glue/.code={%
3563       \pgfkeysedef\pgfkeyscurrentpath{%
3564          \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\glueexpr##1\relax}}%
3565       \pgfkeyslet\pgfkeyscurrentpath\z@skip
3566       \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@skip
3567       \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
3568       \@tfor\x:=#1\do{%
3569          \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3570             \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded=%
3571                \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
3572                \x
3573                \if*\x\noexpand\itf@units@scaleNoCalc##1!
3574                \else\glueexpr\noexpand\unexpanded{##1}\relax\fi}}%
3575       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@skip\fi}%
3576       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@skip\fi}%
3577       }},%
3578    /handlers/.store as glue/.default=+-*,%
3579 }% /.store as glue
```

Handlers definition: /.store as glue in cs=⟨*cs-name*⟩

```
3580 \pgfkeys{%
3581    /handlers/.store as glue in cs/.code={%
3582       \pgfkeysdef\pgfkeyscurrentpath{%
3583          \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3584          \else\csdef{#1}{\glueexpr##1\relax}\fi}%
3585       \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
3586       \@tfor\x:=+-*\do{%
3587          \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3588             \letcs\noexpand\pgfkeys@temp{%
3589                \noexpand\ifcsname#1\endcsname
3590                   #1\noexpand\else z@skip\noexpand\fi}%
3591             \edef\noexpand\pgfkeys@temp{%
3592                \noexpand\noexpand\noexpand\pgfkeysalso{\pgfkeyscurrentpath={%
3593                   \noexpand\expandonce\noexpand\pgfkeys@temp
3594                   \x
3595                   \if*\x\noexpand\itf@units@scaleNoCalc##1!
3596                   \else\glueexpr\noexpand\unexpanded{##1}\relax\fi}}%
3597             }\noexpand\pgfkeys@temp}%
3598       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@skip\fi}%
3599       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@skip\fi}%
3600    }},%
3601    /handlers/.store as glue in cs/.value required,%
3602 }% /.store as glue in cs
```

Handlers definition: /.estore as glue

```
\pgfkeys{%
   /handlers/.estore as glue/.code={%
      \pgfkeysedef{\pgfkeyscurrentpath}{%
         \itf@setlength\itf@sk{##1}%
         \noexpand\pgfkeysEsetvalue{\pgfkeyscurrentpath}{%
                     \noexpand\the\itf@sk}}%
      \pgfkeyslet\pgfkeyscurrentpath\z@skip
      \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@skip
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
      \@tfor\x:=#1\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
               \noexpand\pgfkeysvalueof{\pgfkeyscurrentpath}\x
               \if*\x \noexpand\itf@units@scale##1!
               \else\glueexpr##1\relax\fi}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@skip\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@skip\fi}%
      }},%
   /handlers/.estore as glue/.default=+-*,%
}% /.estore as glue
```

Handlers definition: /.estore as glue in cs=⟨*cs-name*⟩

```
\pgfkeys{%
   /handlers/.estore as glue in cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\itf@setlength\itf@sk{##1}%
              \csedef{#1}{\the\itf@sk}\fi}%
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
      \@tfor\x:=+-*\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
               \noexpand\csname\noexpand\ifcsname#1\endcsname
                  #1\noexpand\else z@skip\noexpand\fi\endcsname
               \x
               \if*\x\noexpand\itf@units@scale##1!
               \else\glueexpr##1\relax\fi}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@skip\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@skip\fi}%
   }},%
   /handlers/.etore as glue in cs/.value required,%
}% /.estore as glue in cs
```

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

```
\pgfkeys{%
   /handlers/.store in skip cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\expandafter\itf@setlength\csname#1\endcsname{##1}\fi}%
      \pgfkeyslet{/\pgfkeyscurrentpath/.@blank}\z@skip
      \@tfor\x:=+-*\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
               \csname#1\endcsname  % should have been defined as a skip (not expandable)
               \x
               \if*\x\noexpand\itf@units@scale##1!
               \else\glueexpr##1\relax\fi}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@skip\fi}%
```

```
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@skip\fi}%
   }},%
   /handlers/.store in skip cs/.value required,%
}% /.store in skip cs
```

Handlers definition: /.store as dimen

```
\pgfkeys{%
   /handlers/.store as dimen/.code={%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\dimexpr##1\relax}}%
      \pgfkeyslet\pgfkeyscurrentpath\z@
      \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
      \@tfor\x:=#1\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
               \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
               \x
               \if*\x \noexpand\itf@units@scaleNoCalc##1!
               \else\dimexpr\noexpand\unexpanded{##1}\relax\fi}}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
      }},%
   /handlers/.store as dimen/.default=+-*,%
}% /.store as dimen
```

Handlers definition: /.store as dimen in cs=⟨*cs-name*⟩

```
\pgfkeys{%
   /handlers/.store as dimen in cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\csdef{#1}{\dimexpr##1\relax}\fi}%
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
      \@tfor\x:=+-*\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \letcs\noexpand\pgfkeys@temp{%
               \noexpand\ifcsname#1\endcsname
                  #1\noexpand\else z@\noexpand\fi}%
            \edef\noexpand\pgfkeys@temp{%
            \noexpand\noexpand\noexpand\pgfkeysalso{\pgfkeyscurrentpath={%
               \noexpand\expandonce\noexpand\pgfkeys@temp
               \x
               \if*\x\noexpand\itf@units@scaleNoCalc##1!
               \else\dimexpr\noexpand\unexpanded{##1}\relax\fi}}%
            }\noexpand\pgfkeys@temp}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
   }},%
   /handlers/.store as dimen in cs/.value required,%
}% /.store as dimen in cs {csname}{+-*}
```

Handlers definition: /.estore as dimen

```
\pgfkeys{%
   /handlers/.estore as dimen/.code={%
      \pgfkeysedef\pgfkeyscurrentpath{%
         \itf@setlength\itf@sk{##1}%
         \noexpand\pgfkeysEsetvalue{\pgfkeyscurrentpath}{%
               \noexpand\the\dimexpr\itf@sk}}%
      \pgfkeyslet\pgfkeyscurrentpath\z@
```

```
      \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
      \@tfor\x:=#1\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
               \noexpand\pgfkeysvalueof{\pgfkeyscurrentpath}\x
               \if*\x   \noexpand\itf@units@scale##1!
               \else    \dimexpr##1\relax\fi}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
      }},%
   /handlers/.estore as dimen/.default=+-*,%
}% /.estore as dimen
```

Handlers definition: /.estore as dimen in cs=⟨*cs-name*⟩

```
\pgfkeys{%
   /handlers/.estore as dimen in cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else \itf@setlength\itf@sk{##1}%
               \csedef{#1}{\the\dimexpr\itf@sk}\fi}%
      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
      \@tfor\x:=+-*\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \noexpand\ifcsname#1\endcsname
               \noexpand\@defaultunits \itf@sk
                  \noexpand\csname#1\endcsname pt\relax\noexpand\@nnil
            \noexpand\else \itf@sk \z@ \noexpand\fi
            \if*\x
               \itf@setlength\itf@sk {\itf@sk*\noexpand\itf@units@scale##1!}%
            \else
               \noexpand\@defaultunits\@tempdima ##1pt \relax\noexpand\@nnil
               \advance\itf@sk\x \@tempdima
            \fi
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath=\itf@sk}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
   }},%
   /handlers/.etore as dimen in cs/.value required,%
}% /.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.

```
\pgfkeys{%
   /handlers/.store in dimen cs/.code={%
      \pgfkeysdef\pgfkeyscurrentpath{%
         \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
         \else\expandafter\itf@setlength\csname#1\endcsname{##1}\fi}%
      \pgfkeyslet{/\pgfkeyscurrentpath/.@blank}\z@
      \@tfor\x:=+-*\do{%
         \pgfkeysedef{\pgfkeyscurrentpath\x}{%
            \if*\x \else
            \noexpand\@defaultunits\itf@sk ##1pt \relax\noexpand\@nnil
            \fi
            \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
               \csname#1\endcsname % has been defined as a dimen (not expandable)
               \x
               \if*\x \noexpand\itf@units@scale##1!
               \else\itf@sk\fi}}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
```

```
3766    }},%
3767    /handlers/.store in dimen cs/.value required,%
3768 }% /.store in dimen cs
```

Handlers definition: /.is multiple choice

```
3769 \pgfkeys{%
3770    /handlers/.is multiple choice/.code=%
3771       \pgfkeys{\pgfkeyscurrentpath/.cd,%
3772       .unknown/.style={%
3773          /errors/unknown choice value=\pgfkeyscurrentkey\pgfkeyscurrentvalue},%
3774       .code=\expandafter\pgfkeys\expandafter{\pgfkeyscurrentkey/.cd,####1}%
3775       },%
3776    /handlers/.is multiple choice/.value forbidden,%
3777 }% /.is multiple choice
```

Handlers definition: /.is enum

```
3778 \pgfkeys{%
3779    /handlers/.is enum/.code={%
3780       \itf@cnt\z@
3781       \@for\x:=\pgfkeyscurrentvalue\do{%
3782          \pgfkeysedef{\pgfkeyscurrentpath/\x}{%
3783             \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\x}%
3784             \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath/.number}{\the\itf@cnt}}%
3785          \ifnum\itf@cnt=\z@
3786             \pgfkeyslet{\pgfkeyscurrentpath/.@def}\x
3787             \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\x
3788          \fi
3789          \advance\itf@cnt\@ne
3790       }%
3791       \pgfkeysalso{\pgfkeyscurrentpath/.is choice}},%
3792    /handlers/.is enum/.value required,%
3793 }% /.is enum

3794 ⟨/pgfkeys⟩
```

21.21 † Interface ☞ etoolbox - etoolbox-like commands

```
3795 ⟨*etoolbox⟩
3796 \ProvidesPackage{interfaces-etoolbox}
3797    [2011/02/19 v3.1 more etoolbox-like commands (FC)]
3798 \RequirePackage{interfaces-base}
3799 \begingroup\catcode`\&=3
3800    \long\gdef\etb@doitem#1&{\do{#1}}
3801 \endgroup
```

\preappto
\epreappto
\gpreappto
\xpreappto

```
3802 \providerobustcmd\preappto[3]{%
3803    \edef#1{\unexpanded{#2}\ifdefined#1\expandonce#1\fi\unexpanded{#3}}%
3804 }% \preappto
3805 \providerobustcmd\epreappto[3]{%
3806    \edef#1{#2\ifdefined#1\expandonce#1\fi#3}%
3807 }% \epreappto
3808 \providerobustcmd*\gpreappto{\global\preappto}
3809 \providerobustcmd*\xpreappto{\global\epreappto}
```

\cspreappto
\csepreappto
\csgpreappto
\csxpreappto

```
3810 \providerobustcmd*\cspreappto[1]{%
3811    \csname itf@\ifcsname#1\endcsname
3812       preappto\else defpreapp\fi\expandafter\endcsname
3813                                \csname#1\endcsname
```

```
}% \cspreappto
\long\def\itf@preappto#1#2#3{\edef#1{#2\expandonce#1#3}}
\long\def\itf@defpreapp#1#2#3{\edef#1{#2#3}}
\providerobustcmd*\csepreappto[1]{%
   \csname itf@\ifcsname#1\endcsname
      preappto\else defpreapp\fi\expandafter\endcsname
                              \csname#1\endcsname
}% \csepreappto
\providerobustcmd*\csgpreappto{\global\cspreappto}
\providerobustcmd*\csxpreappto{\global\csepreappto}
```

\removefrom
\eremovefrom
\gremovefrom
\xremovefrom

```
\providerobustcmd\removefrom[2]{\in@false
   \long\def\itf@tp##1\itf@tp{%
      \in@true
      \edef#1{\unexpanded{##1}}%
   }\expandafter\itf@removefrom\expandafter{#1}{#2}%
}% \removefrom
\providerobustcmd\eremovefrom[2]{\begingroup
   \edef\x{\endgroup\removefrom\noexpand#1{#2}%
   }\x
}% \eremovefrom
\providerobustcmd\gremovefrom[2]{%
   \removefrom{#1}{#2}%
   \global\let#1=#1%
}% \gremovefrom
\providerobustcmd\xremovefrom[2]{%
   \eremovefrom{#1}{#2}%
   \global\let#1=#1%
}% \xremovefrom
```

\itf@removefrom

```
\long\def\itf@removefrom#1#2{% removes #2 (code) from #1 (hook)
   \def\in@@##1#2##2\in@@{\itf@tp##1##2\in@@@}%
   \def\in@@@##1\in@@@@#2\in@@@{%
      \ifx\in@@#2\else##1\fi
   }\expandafter\in@@@\in@@#1\itf@tp\in@@@@#2\in@\in@@
}% \itf@removefrom
```

\removefromstart
\eremovefromstart
\gremovefromstart
\xremovefromstart

```
\newrobustcmd\removefromstart[2]{\in@false
   \long\def\itf@tp##1\itf@tp{%
      \in@true
      \edef#1{\unexpanded{##1}}%
   }\expandafter\itf@removefromstart\expandafter{#1}{#2}%
}% \removefromstart
\providerobustcmd\eremovefromstart[2]{\begingroup
   \edef\x{\endgroup\removefromstart\noexpand#1{#2}%
   }\x
}% \eremovefromstart
\providerobustcmd\gremovefromstart[2]{%
   \removefromstart{#1}{#2}%
   \global\let#1=#1%
}% \gremovefromstart
\providerobustcmd\xremovefromstart[2]{%
   \eremovefromstart{#1}{#2}%
   \global\let#1=#1%
}% \xremovefromstart
```

\itf@removefromstart

```
\long\def\itf@removefromstart#1#2{% removes #2 (code) from #1 (hook)
   \long\def\in@@@##1#2##2\in@@{##1\in@\itf@tp##2\in@@@}%
   \long\def\in@@@@##1\in@@@@#2\in@@@{%
```

```
3869        \ifx\in@##1\fi
3870     }\expandafter\in@@@\in@@#1\itf@tp\in@@@#2\in@@
3871 }% \itf@removefromstart

3872 ⟨/etoolbox⟩
```

22 History

[2011/02/19 v3.1]

- Recompilation of the documentation after tabu[3]v2.5 release.

[2011/02/12 v3.0]

- \tocsetup , \lofsetup , \lotsetup and \listofsetup : hooks: multicols/beforebegin multicols/afterbegin multicols/beforeend multicols/afterend added.
- New in interfaces-LaTeX: \quickprofile .
- Modification of \papergraduate : a non empty setting for [every node/.style] could make the graduation positions to be wrong.
- New key in interfaces-enumitem: first= is an alias for start=.
- \papergraduate: though the graduations were right, the positionning of the graduated paper on the whole page was not.

[2011/01/19 v2.9]

- Modification of the syntax of \papergraduate to allow the same syntax as \path.
  + optional arguments for this command.
- Some correction on \tocsetup : \tocsetup {bookmark=bold} (for example) will automatically set \tocsetup {title=\contentsname } in no key title has been set. Therefore, a bookmark is set for the table of contents...

[2011/01/17 v2.8]

- New: \papergraduate in interfaces-TikZ.

[2010/12/27 v2.6]

- \tocsetup :
  A few new aliases for keys.
  Key columns/sep didn't work. Fixed.
- Generated file interfaces-hypbmsec.code.tex is empty since version v2.5.
- Fixed a bug in \usetikz {all}: pgfmath should not be loaded twice because of \pgfmathdeclarefunction...
  + pgfmodulesorting.code.tex removed: bug in the code...
- interfaces-TikZ : keys shorten>, shorten<, and shorten<>.
- Optimisation.

[2010/12/07 v2.5]

- \sectionformat now works with the explicit option of package titlesec. (*in* interfaces-titlesec)
- Compatibility with calc package as been implemented for pgfkeys handlers:

  /.estore as dimen /.estore as dimen in cs /.store in dimen cs
  /.estore as glue /.estore as glue in cs /.store in skip cs

  As a result, it is now possible to write:

```
\sectionformat\section{labelsep=\widthof{ some text }}
\tocsetup{ section/pagenumbers/width=\widthof{ 00.00\enspace } }
```

  For scaling operations, interfaces keeps the shrink and stretch components of glues, while calc discard them.
- \listofsetup now works properly (interfaces-tocloft).
- Some + and * keys added to interfaces-fancyhdr.

3. tabu: CTAN:macros/latex/contrib/tabu

- Fix a bug of titlesec when inside `.dtx` files: `\input {ttlkeys.def}` shall be done with % as a comment character (`\BeforeFile`...`\AfterFile` does the trick).

[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` .
- `\repeatcell` : modification of the code. & alignment tab character is not activated and the "dirty trick" (according to D. Knuth) `\iffalse {\fi \ifnum 0='}\fi` is used instead.
- `\htruncadjust` produced an error when used with empty text arguments – fixed.
- Modification in `\bottomtitles`: `\bottomtitlespace` should be stored as a dimen, not a skip.
- `\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 `\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 convertion `pt` to `mu` (catcodes...)
- Added microtype to the documentation...

[2010/10/20 v1.0]

- First version.

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 LaTeX.

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-TeX `\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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