

interfaces

interfaces with keys for other packages

FC

2011/02/12 – version 3.0 – release – pgf v2.1 / pgf v2.0 compatible

Abstract

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

`interfaces` is mainly based on `pgfkeys`¹ and `scrfile` for its different modules are loaded `\AfterPackage`. ϵ -TeX is required of course... Each interface is actually made as a separate module, which is loaded automatically after its *master package*. Adding `\usepackage {interfaces}` into your document preamble will make all modules active (*ie.* they will be loaded or not, depending on your document preamble). If you prefer not to use all modules, you can load them separately as a package, for example, type: `\usepackage {interfaces-titlesec}` *after* `\usepackage {titlesec}`. A better way is to add `\usepackage {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-scrfile`, `interfaces-etoolbox`² and `interfaces-pgfkeys`: those are the *system-layer* of `interfaces`.

Example

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

\sectionformat\MiniSection{% new sectionning command
  class=straight[\subparagraph],
  shape=block,
  label=,
  top=3pt plus2pt, bottom=1pt,
  font=\bfseries\sffamily,
  bookmark=off,% or false or none
  break=\allowbreak,
  mark=\marksthe{MiniSection}{#1},% see interfaces-marks
}
\bottomtitles=.2\textheight
\tocsetup{
  depth=3, title=Contents, pagenumbers=on,
  pagestyle=plain,% first page style: tocloftpagestyle
  title/top=1.5ex plus.5ex,
  title/bottom=0pt,
  section/indent=1em,
  section/number/width=1.5em,
  section/font+=\larger\bfseries,% append to previous setting
  section/leaders,section/dotsep,
  subsection/indent=2em,
  subsection/number/width=2.5em,
  subsection/leaders,subsection/dotsep,% default values
  subsection/pagenumbers=off,% no page numbers
  subsection/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`.

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1 Interface L^AT_EX

```
\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 \usetikzlibrary }
```

`\usetikz` is a facility provided to load `pgf`, `tikz`, `pgf-modules`, and `tikz-libraries`, without the need to know if you must use `\usepackage` or `\usepgfmodule` or `\usetikzlibrary`.
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 T<sub>E</sub>X primitive `\leaders` (faster than `grid`).

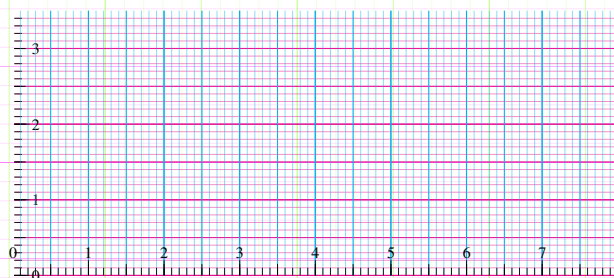
Examples:

```

\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 T<sub>E</sub>X code (`font`, `before` or `after`) are associated with starred keys and `+` keys: they append their content to the previous value. Ex: `font+={\larger }` adds `\larger` to the previous settings.

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

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

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

|                              |                       |                                                                                                                   |
|------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------|
| <code>bookmark/bold</code>   | bold bookmark text    | the text of the bookmark for that sectionning command will be <b>bold</b>                                         |
| <code>bookmark/italic</code> | italic bookmark text  | the text of the bookmark for that sectionning command will be in <i>italic</i>                                    |
| <code>bookmark/color</code>  | colored bookmark text | the text of the bookmark for that sectionning command will be <b>colored</b>                                      |
| <code>bookmark/off</code>    | disable the bookmark  | no bookmark for that sectionning command alternatively you may set <code>bookmark/level</code> to a huge value... |
| <code>bookmark/style</code>  | use a <i>style</i>    | the <i>style</i> must be previously declared with <code>\bookmarkdefinestyle</code>                               |
| <code>bookmark/level</code>  | level of the bookmark | defines <code>\toclevel@&lt;sectionname&gt;</code> , 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 ascertain that there is no bookmark between the one corresponding to the section and the one corresponding to its first subsection, then this is the same as: “`after=\bookmarksetup {color*=red}`”.

### ~~~~~ EXAMPLE ~~~~~

---

```
\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}
```

(out) is used for the bookmark (outline)

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

{title} to typeset the section title in the document

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

`interfaces` takes advantage of this and defines:

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

Macros for each sectionning command are defined:

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

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

Assigment 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 (subtract) or the starred-key\* (scale dimensions) is used. `\tocsetup` settings apply to `\tableofcontents` and also to `\shorttableofcontents` (package `shorttoc`). `\tocsetup` can be invoked more than once in a document...

```
\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|subtract|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 (\cftaftertocitle...)
    parskip|parskip+|parskip-|parskip*|parsep= modifies (or add to) \cftparskip
    dotsep= modifies \cftdotsep if no dimen is specified, mu is assumed, otherwise, conver-
    sion to mu ≈ 1em/18 is supplied. Default value is 4.5mu 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 environ-
    ment. default value: 0ptplus4ptminus3pt.
    multicol/beforebegin= hook just before \begin {(*)}multicols
    multicol/afterbegin|multicol/begin= hook just after \begin {(*)}multicols ...
    multicol/beforeend|multicol/end|multicol/after= hook just before \end {(*)}multicols ...
    multicol/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|¶/beforekip= 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:

```
\newlistof[section]{answer}{ans}{List of Answers}
\newlistentry[answer]{subanswer}{ans}{1}
\listofsetup{ans}{
  depth=2,
  title=List of Answers of the section,% modifies the title
  title/font=\Huge,
  answer/font=\Large\bfseries,
  subanswer/font=\large\itshape,
  answer/dotsep=3mu,
  subanswer/dotsep=,
  subanswer/pagenumbers=off,
}
\addcontentsline{ans}{answer}{\numberline{1}First answer}
\addcontentsline{ans}{subanswer}{\numberline{1.1}First sub-answer}
\listofanswer
```

} preferably in
the preamble

% can be changed inside the document body

% font spec.

% no dot

8 Interface `fancyhdr`: `\pagesetup`

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

`\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, subtraction 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}
\marksthecs {\named-mark}{\cs-name}
```

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

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

`\marksthecs` `{\subsubsection}{\cs-name}` will similarly mark the unexpanded content of `\cs-name` by means of the marks register `\marks@{subsubsection}`. `\cs-name` is really the *name of the control sequence*, not the control sequence itself. If `\cs-name` is undefined or `\relax`, nothing is marked, making `\marksthecs` suitable to use with `\lastsectiontitle` *etc.* at `\sectionbreak` (see [interfaces-hypbmsec](#) p. 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-hyphbmsec`: `\sectionformat \subsection {break=\marksthecs {subsection}{lastsubsection}toc}`.

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
            \crrc \hline or \tabularnewline...)
            end of row sequence is never inserted after the last row.
    text/row1 | text/row2 | text/row3 etc. = If you want to change the text on the specified rows
    text/col1 | text/col2 | text/col3 etc. = If you want to change the text on the specified columns
    font/row1 | font/row2 | font/row3 etc. = If you want to change the font on the specified rows
    font/col1 | font/col2 | font/col3 etc. = If you want to change the font on the specified columns
    cr/row1 | cr/row2 | cr/row3 etc. = If you want to change the end-of-line sequence on the specified rows
    transpose = Do you wish to invert rows and columns ? Then transpose=true ☺.
    any other key = can be used to make calculations using \numexpr or $\pgfmathparse $
                   or $$\FPeval $$$. Pay attention to put your formula inside curly brackets
                   {$formula$} if it contains a comma , or an equal = sign! }
```

☞ If `[<alignment>]` is specified, then each cell is placed into a `\makecell [<alignment>]` command.

☞ If both `text/row<i>` and `text/col<i>` are specified for the same cell, then `makecell \diaghead` is used to display the values in a diagonally divided cell.

☞ If you want to see (in the `.log` file) the code introduced into the tabular (or array) by `\repeatcell` type `\let \itf@message=\message` before `\repeatcell`.

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

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

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

`\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<br>John<br>Tom           |
| Mother  | Father | Children                           |
| Nout    | Geb    | Isis<br>Osiris<br>Seth<br>Nephthys |

### 10.3 † Empty rows

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

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



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

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

## 10-4 † color palette

```
\begin{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 `pgfmth`

```
\def\listofx{ -4 , -2 , 0 , 2.25 , 7 }
\begin{tabu}{c<\bottomstrut|*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 |

`\pgfmth` 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\bottomstrut}
\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 | denutrition     |
| 45                          | 12.5 | 13.9 | 15.6 | 17.6 | 20.0 | 23.0 | 26.6 | skinniness      |
| 50                          | 13.9 | 15.4 | 17.3 | 19.5 | 22.2 | 25.5 | 29.6 | normal          |
| 55                          | 15.2 | 17.0 | 19.0 | 21.5 | 24.4 | 28.1 | 32.5 | obesity         |
| 60                          | 16.6 | 18.5 | 20.8 | 23.4 | 26.7 | 30.6 | 35.5 |                 |
| 65                          | 18.0 | 20.1 | 22.5 | 25.4 | 28.9 | 33.2 | 38.5 | serious obesity |
| 70                          | 19.4 | 21.6 | 24.2 | 27.3 | 31.1 | 35.7 | 41.4 |                 |
| 80                          | 22.2 | 24.7 | 27.7 | 31.3 | 35.6 | 40.8 | 47.3 | morbid obesity  |
| 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 |                 |

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

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

The example give in real world:

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

And the following follows...

## 12 Interface `truncate`

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

```
\truncate [<TruncateMarker>]{<width>}{<text>}
```

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

```
\truncertext [<TruncateMarker>]{<width>}{<text>}
```

`\truncertext` 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:

|                           |                                                               |                                                                                               |
|---------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <code>truncate:</code>    | <code>\truncate {&lt;5cm&gt;}{&lt;Hello world!&gt;}</code>    | <div style="border: 1px solid black; padding: 2px; display: inline-block;">Hello word!</div>  |
| <code>truncertext:</code> | <code>\truncertext {&lt;5cm&gt;}{&lt;Hello world!&gt;}</code> | <div style="border: 1px solid black; padding: 2px; display: inline-block;">Hello world!</div> |

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

```
\htruncadjust {<total width>}[<x1, x2, ..., xn>]{<text1, text2, ..., textn>}
```

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

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

Another example of a tabular made with `\repeatcell`

The widths can be accessed with `\htruncwidth {<i>}` and then:

```
\truncertext [<TruncateMarker>]{\htruncwidth {<i>}}{<texti>}
```

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

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

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

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

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

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

```
\htruncadjust{3cm}{first quite long,second short,third} % natural widths
\truncertext{\htruncwidth{1}}{first quite long}
\truncertext{\htruncwidth{2}}{second short}
\truncertext{\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 embedded (*ie.* attached) to the `.pdf` file are the ones specified by `\includeonly`.

`\embedthisfile *` embeds only the main file.

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

## 15 Interface `environ`

`environ` defines `\Renewenvirom` but I found out it was usefull to have `\ReNewEnvirom` (note the case!)

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

## 16 Interface `umrand`

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

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

## 17 Interface `pgfkeys` (📖 [pgfmanual](#))

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

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

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

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

Furthermore:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

This is the way the key `size` is defined for the command `\change font` (in `interfaces-Latex`). `size` defines `\f@size`, the macro used by `LATEX` to store the font size (and `size+` adds, `size-` subtracts, `size*` scales). But `\f@size` is stored in points, without the mention of the dimension: `pt`.

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

## 18 Interface etoolbox - etoolbox-like commands

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

### 18.1 New macros provided with `\providecommand`

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

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

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

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


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


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


this allows loops of the form:

`\in@true`

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

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

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

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

## 19 Interface scrfile

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

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

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

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

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

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

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

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

## 20 List of corrected or patched commands

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

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

20.1 † `LaTeX`

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

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

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

|   | Patched command           | Type         | Importance | Module                           | ref. page |
|---|---------------------------|--------------|------------|----------------------------------|-----------|
| ❹ | <code>\[ ]bookmark</code> | <i>modif</i> | important  | <code>interfaces-bookmark</code> | 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`

|   | Patched command            | Type | Importance                      | Module                          | ref. page |
|---|----------------------------|------|---------------------------------|---------------------------------|-----------|
| ❺ | <code>\[ ]newlistof</code> |      | important<br>but no side effect | <code>interfaces-tocloft</code> |           |

20.4 † `colortbl`

|   | Patched command           | Type         | Importance                      | Module                           | ref. page |
|---|---------------------------|--------------|---------------------------------|----------------------------------|-----------|
| ❻ | <code>\[ ]CT@cellc</code> | <i>corr.</i> | important<br>but no side effect | <code>interfaces-makecell</code> | 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
\edef\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 |
|---|---------------------------------------------------------|--------------|---------------------------------|----------------------------------------------------------------------------|-----------|
| ⑦ | <code>\[ ]hbs@do</code><br><code>\[ ]hbs@process</code> | <i>redef</i> | important<br>but no side effect | <a href="#">interfaces-hypbmsec</a><br><a href="#">interfaces-titlesec</a> | 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 |
|---|--------------------------|--------------|-------------------------------------|-------------------------------------|-----------|
| ⑧ | <code>\[ ]setlist</code> | <i>redef</i> | minor<br>optimisation or correction | <a href="#">interfaces-enumitem</a> | 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 |
|---|------------------------------------------------------------------------|--------------|------------|------------------------------------|-----------|
| ⑨ | <code>\[ ]pgfkeys@unpack</code><br><code>\[ ]pgfkeys@case@three</code> | <i>redef</i> | important  | <a href="#">interfaces-pgfkeys</a> | 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   [2011/02/12 v3.0 - 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{hyrbmsec}
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   [2011/02/12 v3.0 Interfaces core system layer (FC)]
31 \RequirePackage{etex,ltxcmds,etoolbox,pgfkeys,scrfile,infwarerr}
32 \AtEndOfPackage{%
33   \RequirePackage{interfaces-etoolbox}%
34   \RequirePackage{interfaces-scrfile}%
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 L<sup>A</sup>T<sub>E</sub>X’s `\@ifpackageloaded` – this macros is not restricted to the document preamble.

```

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

```



```

91  #1\itf@tp{#3}%
92  {\let#2\itf@tp
93   \AtBeginDocument{#4}% in order to keep this info even after \dump
94  }
95  {#5}%
96}% \itf@patch@boundary (for \pretocmd and \apptocmd)
97\def\itf@patch@inside#1#2#3#4#5#6{%
98  \catcode'\#6%
99  \let\itf@tp#2%
100  #1\itf@tp{#3}{#4}%
101  {\ifx#1\patchcmd \itf@patch@inside@{#1}{#3}{#4}\fi
102   \let#2\itf@tp
103   \AtBeginDocument{#5}%
104  }
105  {#6}%
106}% \itf@patch@inside (for \patchcmd)
107\def\itf@patch@inside@#1#2#3{%
108  \loop
109    \let\@tempa \itf@tp
110    #1\itf@tp{#2}{#3}{}}}%
111  \unless\ifx \@tempa\itf@tp
112  \repeat
113}% \itf@patch@inside@

```

### 21.2.2 Helper macros

```

114 \newskip\itf@sk
115 \newmuskip\itf@musk
116 \newtoks\itf@tk
117 \newcount\itf@cnt

```

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

```

\itf@strip@dot
118%%  H E L P E R   M A C R O S
119\begingroup\makeatother
120  \csgdef\itf@strip@at{#1@{}}
121\endgroup
122\def\itf@strip@dot#1.#2\@nil{#1}

```

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

USAGE: `\itf@expandonceifcs \macrotest`

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

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

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

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

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

```

123 \def\itf@expandonceifcs#1{\expandafter\itf@exp@ndonceifcs\expandafter#1\Q\@nnil}
124 \def\itf@exp@ndonceifcs#1#2#3\@nnil{%
125   \def\itf@tp{#2}%
126   \ifx\itf@tp#1%
127     \ifcat\relax\noexpand#2%
128       \expandafter\expandafter\expandafter\remove@to@nnil
129       \expandafter\ifx\expandafter#2#2\@nnil\else\@nnil\let#1#2\fi
130   \fi\fi
131}% \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`.

```

132%%   G E T   A   N U M B E R (if possible)
133%%   USAGE: \itf@number\count<text>\relax\@nnil (like \@defaultunits)
134\def\itf@number#1#2\relax\@nnil{% \relax is to mimick the syntax of \@defaultunits
135   \afterassignment\itf@number@#1\number0#2\relax\itf@number@
136 }
137\def\itf@number@#1\relax#2\itf@number@{%
138   \ifblank{#1}
139     {\itf@number@@{}}#2\itf@number@@\@nnil
140     \csname ltx@\ifx\@let@token\itf@number@@
141       first\else second\fi oftwo\endcsname}
142   \ltx@secondoftwo
143}% \itf@number@
144\def\itf@number@@#1{\futurelet\@let@token\itf@number@@@}
145\def\itf@number@@@{%
146   \csname \ifx\@let@token\relax itf@number@@@
147   \else remove@to@nnil%
148   \fi \endcsname
149}% \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`:

```

150\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.

```

151%% glue * 1.5 = glue * 98302 / 65536
152%% glue * 3/2 = glue * 3/2
153\def\itf@units@scale#1!{\itf@units@scale@normalize#1/\@nnil/\@nil}
154\def\itf@units@scale@normalize#1/#2/#3\@nil{%
155   \ifx#2\@nnil \number\dimexpr#1pt\relax/65536
156   \else#1/#2
157   \fi
158}% \itf@units@scale@normalize
159\def\itf@units@scaleNoCalc#1!{\itf@units@scale@normalizeNoCalc#1/\@nnil/\@nil}
160\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.

```

161\protected\def\itf@setlength@calc#1#2{\begingroup
162   \let\calc@multiply@by@real \itf@calc@multiply@by@real
163   \let\calc@Adimen \itf@calc@Askip \let\calc@Bdimen \itf@calc@Bskip
164   \setlength{#1}{#2}%
165   \expandafter\endgroup\expandafter#1\the#1\relax
166}% \itf@setlength@calc
167\def\itf@units@scale@normalize@calc#1/#2/#3\@nil{%
168   \ifx#2\@nnil 1*\ratio{\dimexpr#1pt\relax}\p@
169   \else
170     1*\ratio{\dimexpr#1pt\relax}/{\dimexpr#2pt\relax}%
171   \fi
172}% \itf@units@scale@normalize@calc
173\def\itf@calc@multiply@by@real#1{%
174   \calc@Bdimen\glueexpr\calc@B*\number\dimexpr#1pt\relax/65536\relax

```

```

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 L<sup>A</sup>T<sub>E</sub>X'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`  $1mu$  is exactly  $1em/18$  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 \mutogluemueexpr#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

```

```

227 \expandafter\endgroup
228 \ifin@
229 #1=\itf@units@mutopt{#2}%
230 \else
231 \@defaultunits#1 #2pt\relax\@nnil
232 \fi
233 }}}} \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 `xcolor`, but it works with `color`).

```

234 \AtBeginDocument{%
235   \ltx@ifpackageloaded{xcolor}
236     {\@ifundefinedcolor{default}
237       {\colorlet{default}{.}}
238     }{}%
239   {\ltx@ifpackageloaded{color}
240     {\@ifundefined{\string\color @default}
241       {\expandafter\def\csname\string\color @default\endcsname{\default@color}}
242     }{}%
243   }{}%
244 }

245 </base>

```

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

```

246 <*LaTeX>
247 \ProvidesPackage{interfaces-LaTeX}
248 [2011/02/12 v3.0 pgfkeys macros for LaTeX (FC)]
249 \RequirePackage{interfaces-base}
250 \itf@pgfkeys

```

### 21.3.1 `\change font`

`\change font` 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.

```

251 \newrobustcmd*\change font[1]{\itf@pgfkeys
252   \pgfqkeys{/itf/LaTeX/change font}{#1}\selectfont
253 }% \change font
254 \AfterPackage{*}{hyperref}
255   {\pdfstringdefDisableCommands{\let\change font\@gobble}}

256 \pgfqkeys{/itf/LaTeX/change font}{%
257   encoding/.code=\fontencoding{#1},encoding/.value required,%
258   enc/.alias=encoding,%
259   family/.code=\fontfamily{#1},family/.value required,%
260   fam/.alias=family,%
261   series/.code=\fontseries{#1},series/.value required,%
262   ser/.alias=series,%

```

```

263   shape/.code=\fontshape{#1},shape/.value required,%
264   sha/.alias=shape,%
265   size/.estore as dimen in cs=f@size,%
266   size/.append code=\set@fontsize\f@linespread\f@size\f@baselineskip,%
267   siz/.alias*=size,%
268   baselineskip/.estore as glue in cs=f@baselineskip,%
269   baselineskip/.append code=\set@fontsize\f@linespread\f@size\f@baselineskip,%
270   skip/.alias*=baselineskip,%
271   @linespread/.estore as dimen,%
272   @linespread/.append code=
273     \pgfkeysgetvalue{/itf/LaTeX/changefont/@linespread}\pgfkeys@temp
274     \ifx\pgfkeys@temp\empty \let\pgfkeys@temp \p@ \fi
275     \edef\f@linespread{\expandafter\rem@pt\pgfkeys@temp}%
276     \set@fontsize\f@linespread\f@size\f@baselineskip,%
277   @linespread/.initial=\p@,%
278   linespread/.code=\@defaultunits\itf@sk #1pt\relax\@nnil
279     \pgfkeysalso{/itf/LaTeX/changefont/@linespread=\itf@sk},%
280   linespread+/.code=\@defaultunits\itf@sk #1pt\relax\@nnil
281     \pgfkeysalso{/itf/LaTeX/changefont/@linespread+=\itf@sk},%
282   linespread-/.code=\@defaultunits\itf@sk #1pt\relax\@nnil
283     \pgfkeysalso{/itf/LaTeX/changefont/@linespread-=\itf@sk},%
284   linespread*/.alias=@linespread*,%
285   spread/.alias*=linespread,%
286}% \pgfkeys definitions for \changefont
287\itf@AfterPackage{color}{%
288  \pgfkeysifdefined{/itf/LaTeX/changefont/color/.@cmd}{%
289    {\pgfkeys{/itf/LaTeX/changefont/color/.code=\color{#1}}}%
290}% AfterPackage color
291\itf@AfterPackage{xcolor}{%
292  \pgfkeysifdefined{/itf/LaTeX/changefont/color/.@cmd}{%
293    {\pgfkeys{/itf/LaTeX/changefont/color/.code=\color{#1}}}%
294}% AfterPackage xcolor

```

### 21.3.2 \quickprofile

\quickprofile

```

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

297 \def\itf@profileloop{%
298   \edef\itf@N {\the\count@}\let\itf@n \z@
299   \edef\itf@time{\the\pdfelapsedtime}%
300   \loop
301     \message{^^JProfiler: step \number\itf@n}%
302     \setbox\z@=\vbox{{\the\toks@}}%
303     \count@ \itf@n\advance\count@ \@ne
304     \ifnum \count@<\itf@N
305       \edef\itf@n{\the\count@}%
306     \repeat
307     \message{^^J(interfaces) quickprofile: Time elapsed for \itf@N\space cycles:
308       \the\numexpr(\pdfelapsedtime-\itf@time-32767)/65536\relax sec
309       \the\numexpr\numexpr(\pdfelapsedtime-\itf@time)
310         -\numexpr(\pdfelapsedtime-\itf@time-32767)/65536\relax*65536\relax
311         *1000/65536\relax ms}%
312   \endgroup
313}% \itf@profileloop

314 \</LaTeX>

```

## 21.4 Interface TikZ ()

```

315 <*tikz>
316 \ProvidesPackage{interfaces-tikz}
317 [2011/02/12 v3.0 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 `\usetikzlibrary`.

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,%

```

```

358 datavisualization,%
359 datavisualization.3d,%
360 datavisualization.barcharts,%
361 datavisualization.formats.functions,%
362 datavisualization.polar,%
363 datavisualization.sparklines,%
364 decorations,%
365 decorations.footprints,%
366 decorations.fractals,%
367 decorations.markings,%
368 decorations.pathmorphing,%
369 decorations.pathreplacing,%
370 decorations.shapes,%
371 decorations.text,%
372 er,%
373 %%external,% needs special setup
374 fadings,%
375 fit,%
376 fixedpointarithmetic,%
377 folding,%
378 fpu,%
379 graphs,%
380 graphs.basic,%
381 intersections,%
382 lindenmayersystems,%
383 matrix,%
384 mindmap,%
385 patterns,%
386 petri,%
387 plothandlers,%
388 plotmarks,%
389 positioning,%
390 scopes,%
391 shadings,%
392 shadows,%
393 shapes,%
394 shapes.arrows,%
395 shapes.callouts,%
396 shapes.gates.logic.IEC,%
397 shapes.gates.logic.US,%
398 shapes.geometric,%
399 shapes.misc,%
400 shapes.multipart,%
401 shapes.symbols,%
402 snakes,%
403 spy,%
404 svg.path,%
405 through,%
406 topaths,%
407 trees,%
408 turtle%
409 }% \alltikzlibraries

```

### 21.4.3 pgfkeys definitions for `\usetikz`

```

410 \pgfqkeys{/itf/tikz}{%
411   basic/.code={%
412     \usetikzlibrary{calc,%           for coordinate calculations
413                       arrows,%       for arrows
414                       backgrounds,%   for framed
415                       scopes,%       for scopes and shortcut : { [scope] ... }
416                       shapes,%       for ellipse shapes of nodes
417     }%
418   },%

```



```

419  basic/.value forbidden,%    \alltikzpackages
420  base/.alias=basic,%
421  all/.code={%
422    \expandafter\RequirePackage\expandafter{\alltikzpackages}%
423    \expandafter\usepgfmodule\expandafter{\allpgfmodules}% see pgfcorescope.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,%

```

```

471 unit/.style={x={#1},y={#1}},%
472 units/.alias=unit,xy/.alias=unit,%
473 xrule/.true=\pgfkeyslet{/itf/tikz/papergraduate/hasHrule}\@firstofone,%
474 xrule/.false=\pgfkeyslet{/itf/tikz/papergraduate/hasHrule}\@gobble,%
475 xrule/on/.alias=xrule/true,xrule/off/.alias=xrule/false,%
476 Hrule/.alias=xrule,%
477 xrule/font/.store as code,%
478 xrule/font/.default=\tiny,%
479 Hrule/font/.alias=xrule/font,%
480 yrule/.true=\pgfkeyslet{/itf/tikz/papergraduate/hasVrule}\@firstofone,%
481 yrule/.false=\pgfkeyslet{/itf/tikz/papergraduate/hasVrule}\@gobble,%
482 yrule/on/.alias=yrule/true,yrule/off/.alias=yrule/false,%
483 Vrule/.alias=yrule,%
484 yrule/font/.store as code,%
485 yrule/font/.default=\tiny,%
486 Vrule/font/.alias=yrule/font,%
487 font/.style={xrule/font={#1},yrule/font={#1}},%
488 rule/font/.alias=font,%
489 text opacity/.initial=.8,%
490 text opacity/.default=.8,text opacity/blank=.8,%
491 norule/.style={xrule=false,yrule=false},%
492 norules/.alias=norule,%
493 @reset/.style={font,xrule,yrule,color,unit,opacity},%
494}% keys for \papergraduate options
495\def\itf@graduation@vert[#1]#2#3#4#5{%
496 \node at (0,0) [{inner sep=0pt,outer sep=0pt,anchor=south west,
497 color=\pgfkeysvalueof{/itf/tikz/papergraduate/ycolor},#1}] {%
498 \hbox to#2{\leaders
499 \hbox to\dimexpr\pgf@yy/#4{\hss\vrule height#3 depth\z@ width#5}\hss}}
500\def\itf@graduation@horiz[#1]#2#3#4#5{
501 \node at (0,0) [{inner sep=0pt,outer sep=0pt,anchor=north west,yscale=-1,
502 color=\pgfkeysvalueof{/itf/tikz/papergraduate/xcolor},#1}] {%
503 \rlap{\vbox to#3{\leaders \vbox to\dimexpr\pgf@xx/#4{
504 \kern-\dimexpr#5/2\hrule width#2 depth0pt height#5}\vss}}}}
505\def\itf@wallpapergraduate #1{%
506 \tikz[remember picture,overlay] {%
507 \pgfkeys{/itf/tikz/papergraduate}{@reset,#1}%
508 \begin{scope}[shift=(current page.south west),
509 x=\pgfkeysvalueof{/itf/tikz/papergraduate/x},%
510 y=\pgfkeysvalueof{/itf/tikz/papergraduate/y},%
511 text opacity=\pgfkeysvalueof{/itf/tikz/papergraduate/opacity}}]%
512 \itf@paper@graduate \paperwidth \paperheight
513 \end{scope}}%
514}% \itf@wallpapergraduate
515\def\itf@papergraduate #1#2;%
516 \begin{scope}[every node/.style={}]%
517 \pgfkeys{/itf/tikz/papergraduate}{@reset,#1}%
518 \coordinate (itf@papergraduate) at #2;
519 \@tempdima \pgf@x \@tempdimb \pgf@y
520 \pgfpointanchor {itf@papergraduate}{center}
521 \advance\@tempdima -\pgf@x
522 \ifdim\@tempdima<\z@ \@tempdima \m@ne\@tempdima \fi
523 \advance\@tempdimb -\pgf@y
524 \ifdim\@tempdimb<\z@ \@tempdimb \m@ne\@tempdimb \fi
525 \edef\itf@tp{%
526 \noexpand\begin{scope}[shift={(\the\pgf@x,\the\pgf@y)},%
527 x=\pgfkeysvalueof{/itf/tikz/papergraduate/x},%
528 y=\pgfkeysvalueof{/itf/tikz/papergraduate/y},%
529 text opacity=\pgfkeysvalueof{/itf/tikz/papergraduate/opacity}%
530 \noexpand\itf@paper@graduate {\the \@tempdima}{\the \@tempdimb}%
531 \noexpand\end{scope}%
532 }\itf@tp
533 \end{scope}%
534}% \paper@graduate
535\def\itf@paper@graduate #1#2{\hfuzz\maxdimen\v fuzz\hfuzz\hbadness\@M\vbadness\hbadness

```

```

536 \itf@graduation@horiz [text opacity/.expanded={\tikz@textopacity/2}] {#1}{#2}{10}{.1pt};%
537 \itf@graduation@horiz [] {#1}{#2}{2}{.1pt};% opacity=.25
538 \itf@graduation@horiz [] {#1}{#2}{1}{.2pt};
539 \pgfkeysvalueof{/itf/tikz/papergraduate/hasVrule}{%
540 \itf@graduation@horiz [black,nearly opaque] {1mm}{#2}{10}{.1pt};% opacity=.75
541 \itf@graduation@horiz [black,nearly opaque] {1.5mm}{#2}{2}{.1pt};
542 \itf@graduation@horiz [black,opaque] {2mm}{#2}{1}{.1pt};
543 \begin{scope}[inner sep=0pt,outer sep=0pt,%
544 text opacity=\pgfkeysvalueof{/itf/tikz/papergraduate/text opacity},%
545 font=\pgfkeysvalueof{/itf/tikz/papergraduate/yrule/font}]%
546 \begingroup
547 \let\itf@tp \@empty \dimen@ \z@ \count@ \z@
548 \@whiledim \dimen@<#2\do{%
549 \edef\itf@tp{\itf@tp (3mm,\the\dimen@) node {\the\count@}}%
550 \advance\count@ \@ne \dimen@ \count@\pgf@xx
551 }\expandafter\endgroup\expandafter \path \itf@tp;
552 \end{scope}}%
553 \itf@graduation@vert [text opacity/.expanded={\tikz@textopacity/2}] {#1}{#2}{10}{.1pt};
554 \itf@graduation@vert [] {#1}{#2}{2}{.1pt};
555 \itf@graduation@vert [] {#1}{#2}{1}{.2pt};
556 \pgfkeysvalueof{/itf/tikz/papergraduate/hasHrule}{%
557 \itf@graduation@vert [black,nearly opaque] {#1}{1mm}{10}{.1pt};
558 \itf@graduation@vert [black,nearly opaque] {#1}{1.5mm}{2}{.1pt};
559 \itf@graduation@vert [black,opaque] {#1}{2mm}{1}{.1pt};
560 \begin{scope}[inner sep=0pt,outer sep=0pt,%
561 text opacity=\pgfkeysvalueof{/itf/tikz/papergraduate/text opacity},%
562 font=\pgfkeysvalueof{/itf/tikz/papergraduate/xrule/font}]%
563 \begingroup
564 \let\itf@tp \@empty \dimen@ \z@ \count@ \z@
565 \@whiledim \dimen@<#1\do{%
566 \edef\itf@tp{\itf@tp (\the\dimen@,3mm) node {\the\count@}}%
567 \advance\count@ \@ne \dimen@ \count@\pgf@xx
568 }\expandafter\endgroup\expandafter \path \itf@tp;
569 \end{scope}}%
570}% \itf@paper@graduate
571 </tikz>

```

## 21.5 † Interface `titlesec`: `\sectionformat`

```

572 (*titlesec)
573 \ProvidesPackage{interfaces-titlesec}
574 [2011/02/12 v3.0 pgfkeys macros for titlesec (FC)]
575 \RequirePackage{interfaces-base}
576 \RequirePackage{auxhook}% <fix for \ttl@append (odd/even pages)>
577 \RequirePackage{getttitlestring}
578 \itf@Check@Package{titlesec}

```

### 21.5.1 `titlesec` modifications

```

579%% t i t l e s e c "p a t c h e s"
580\robustify\titleclass \robustify\titleformat \robustify\titlespacing
581\AddLineBeginMainAux{%
582 \string\providecommand\string\ttl@append[2]{}%
583 }
584\BeforeFile*{ttlkeys.def}{%
585 \expandafter\edef\csname itf@ttlkeys.def\endcsname{%
586 \catcode32 \the\catcode32\relax
587 \catcode37 \the\catcode37\relax
588 \endlinechar\the\endlinechar\relax}%
589 \catcode37 14\relax % percent=comment (inside .dtx files...)
590 \catcode32 9\relax % ignore spaces
591 \endlinechar\m@ne % and line feeds
592 }
593\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**.

```
594 %%-----
595 %% runinifempty => like hang but no paragraph break (like runin) if title is empty
596 \def\ttlh@runinifempty{%
597   \csname ttlh@ifx\ttl@savetitle\empty runin\else hang\fi\endcsname
598 }% \ttlh@runinifempty
```

## 21.5.2 `\sectionformat`

```
\sectionformat \sectionformat \subsection * [<shape>]{<key=value>}

599 \newrobustcmd*\sectionformat[1]{\@ifstar
600   {\itf@sectionformat{#1}{/*}}
601   {\itf@sectionformat{#1}{}}}%
602 }% \sectionformat
603 \def\itf@sectionformat#1#2{\@testopt
604   {\expandafter\expandafter\expandafter%
605     \itf@sectionformat\expandafter\@gobble\string#1\@nil{#2}}}%
606 }% \sectionformat
607 \def\itf@sectionformat#1\@nil#2[#3]#4{\itf@pgfkeys\ifblank{#3}
608   {\pgfkeys{/itf/titlesec/#1#2}
609     {/itf/titlesec/@setup={#1}{#2},#4,/itf/titlesec/@update={#1}{#2}}}
610   {\pgfkeys{/itf/titlesec/#1#2}
611     {/itf/titlesec/@setup={#1}{#2},#4,shape={#3},/itf/titlesec/@update={#1}{#2}}}%
612 }% \itf@ttl@sectionformat

\itf@ttl@setup      Macros used to retrieve the values set by \titleformat and/or \titlespacing. This allows to use
\itf@ttl@getformat  \sectionformat concurrently with \titleformat and \titlespacing provided by titlesec.
\itf@ttl@getspacing 613 %% private keys @setup and @update
614 \pgfkeys{/itf/titlesec}{%
615   @setup/.code 2 args=\itf@ttl@setup{#1}{#2},%
616   @update/.code 2 args=\expandafter\itf@ttl@update
617     \csname#1\endcsname{/itf/titlesec/#1}{#2}%
618 }
619 \newrobustcmd*\itf@ttl@setup[2]{%
620   \pgfkeysifdefined{/itf/titlesec/#1#2/shape}{%
621     {\itf@ttl@newsection{#1}{#2}}}%
622   \ifcsundef{ttls@#1#2}{}% no previous spacing settings
623     {\expandafter\expandafter\expandafter%
624       \itf@ttl@getspacing\csname ttls@#1#2\endcsname{/itf/titlesec/#1#2}}%
625   \ifcsundef{ttl@#1#2}{}% no previous format settings
626     {\ifttl@explicit
627       \expandafter\expandafter\expandafter%
628       \itf@ttl@getformat\csname ttl@#1#2\endcsname{/itf/titlesec/#1#2}%
629     }%
630     \expandafter\expandafter\expandafter%
631     \itf@ttl@getformat\csname ttl@#1#2\endcsname{/itf/titlesec/#1#2}%
632   \fi}%
633 }% \itf@ttl@setup
634 \def\itf@ttl@setkey#1#2{\begingroup
635   \def\x{\pgfkeysvalueof{#1}}\def\y{#2}%
636   \expandafter\endgroup\ifx\x\y\else
637     \pgfkeyssetvalue{#1}{#2}\fi
638 }% \itf@ttl@setkey
639 \def\itf@ttl@getspacing#1#2#3#4#5#6{%
640   \itf@ttl@setkey{#6/left}{#1}%
641   \itf@ttl@setkey{#6/right}{#2}%
642   \itf@ttl@setkey{#6/top}{#3}%
643   \itf@ttl@setkey{#6/bottom}{#4}%
644   \itf@ttl@setkey{#6/indent first}{#5}%
645 }% \itf@ttl@getspacing
646 \def\itf@ttl@getformat#1#2{%
```

```

647 \csname ltx@ifx\pgfkeysvalueof#1first\else second\fi oftwo\endcsname
648 {\itf@ttl@get@format{}}
649 {\itf@ttl@get@format{#1}{#2}}%
650}% \itf@ttl@get@format
651\def\itf@ttl@get@format#1#2#3#4#5#6#7{%
652 \if\relax\detokenize{#1}\relax\else
653 \pgfkeysEsetvalue{#7/shape}{\expandafter\itf@strip@at\string#1}%
654 \fi
655 \itf@ttl@setkey{#7/font}{#2}%
656 \itf@ttl@setkey{#7/label}{#3}%
657 \itf@ttl@setkey{#7/sep}{#4}%
658 \itf@ttl@setkey{#7/before}{#5}%
659 \itf@ttl@setkey{#7/after}{#6}%
660}% \itf@ttl@get@format

```

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

```

661\newrobustcmd*\itf@ttl@update[3]{%
662 \ifblank{#3}
663 {\ttl@getkeys{#1}{titlesec}}
664 {\ttl@getkeys{name=#1,numberless}{titlesec}}%
665 \pgfkeysgetvalue{#2#3/shape}\itf@tp
666 \ifcsundef{ttlh@\itf@tp}
667 {\begingroup \makeatletter
668 \InputIfFileExists{\itf@tp.tss}{}%
669 \PackageError{titlesec}{Unknown shape}%
670 {Shapes are defined in files with extension tss\MessageBreak
671 Either you have misspelled the shape\MessageBreak
672 or there is no a \itf@tp.tss file}}%
673 \endgroup}
674 {}%
675 \ifttl@explicit \begingroup
676 \pgfkeysgetvalue{#2#3/before}\pgfkeys@temp
677 \toks@\expandafter{\pgfkeys@temp}%
678 \edef\x{\endgroup\def\noexpand\itf@tp###1{\the\toks@}}%
679 \x \pgfkeyslet{#2#3/before@cmd}\itf@tp
680 \@temptokena{\csdef{ttl@f@ttl@a}##1}%
681 \the\@temptokena{%
682 \pgfkeysvalueof{#2#3/shape@cs}%
683 {\pgfkeysvalueof{#2#3/font}}%
684 {\pgfkeysvalueof{#2#3/label}}%
685 {\pgfkeysvalueof{#2#3/sep}}%
686 {\pgfkeysvalueof{#2#3/before@cmd}{##1}}%
687 {\pgfkeysvalueof{#2#3/after}}}%
688 \else\@temptokena{\csdef{ttl@f@ttl@a}}%
689 \the\@temptokena{%
690 \pgfkeysvalueof{#2#3/shape@cs}%
691 {\pgfkeysvalueof{#2#3/font}}%
692 {\pgfkeysvalueof{#2#3/label}}%
693 {\pgfkeysvalueof{#2#3/sep}}%
694 {\pgfkeysvalueof{#2#3/before}}%
695 {\pgfkeysvalueof{#2#3/after}}}%
696 \fi
697 \csname ttl@compat\ttl@a\endcsname
698 \ttl@spacing@ii
699 {\pgfkeysvalueof{#2#3/indent first}}%
700 {\pgfkeysvalueof{#2#3/left}}%
701 {\pgfkeysvalueof{#2#3/top}}%
702 {\pgfkeysvalueof{#2#3/bottom}}%
703 [\pgfkeysvalueof{#2#3/right}}%
704}% \itf@ttl@update

```

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

- change the class of an existing sectionning command;



or:

- create a new sectioning command.

```

705 %%-----
706 %%   t i t l e c l a s s
707 \newrobustcmd*\itf@ttl@titleclass{\@ifstar
708   {\itf@ttl@titleclass@i*}
709   {\itf@ttl@titleclass@i}}%
710}% \itf@ttl@titleclass
711 \def\itf@ttl@titleclass@i#1#2#3[#4]#5\@nil{\ifblank{#4}
712   {%
713     \expandafter\titleclass\csname#2\endcsname{#3}%
714   }
715   {%
716     \expandafter\titleclass\csname#2\endcsname{#3}[{#4}]% #4 = sup-level
717     \if\relax#1\relax % not starred
718       \expandafter\expandafter\expandafter%
719       \itf@ttl@titleclass@ii\expandafter\@gobble\string#4\relax{#2}% \@addtoreset...
720     \fi
721   }%
722   \expandafter\providecommand\csname l@#2\endcsname[2]{}% no entry in toc
723}% \itf@ttl@titleclass@i
724 \def\itf@ttl@titleclass@ii#1\relax#2{%
725   \ifcsundef{c@#2}
726     {\newcounter{#2}[{#1}]}% creates counter for #1
727     {\@addtoreset{#2}{#1}}%
728   \csxdef{the#2}{%
729     \expandafter\noexpand\csname the#1\endcsname
730     .\noexpand\@arabic\expandafter\noexpand\csname c@#2\endcsname
731   }% \the#2
732   \ifcsundef{l@#1}{}%
733     \expandafter\providecommand\csname l@#2\endcsname[2]{%
734       \csname l@#1\endcsname{##1}{##2}%
735     }% \l@#2 = \l@newsection is (by default) the same as \l@sup-level
736   }%
737}% \itf@ttl@titleclass@ii

```

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

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

```

738 %%-----
739 %%   C r e a t i n g   n e w   s e c t i o n s
740 \def\itf@ttl@createsection#1{% sectioning command undefined: temporarily defined
741   \expandafter\titleclass\csname#1\endcsname{straight}[*]%      in straight class
742   \itf@AfterPackage{hypbmsec}{%
743     \AfterPreamble{%
744       \csletcs{hbs@#1}{#1}%
745       \csxdef{#1}{\noexpand\hbs@do\expandafter\noexpand\csname hbs@#1\endcsname}%
746     }%
747   }%
748   \itf@AfterPackage{interfaces-tocloft}{%
749     \itf@cft@newsection{toc}{#1}%
750   }%
751   \itf@AfterPackage{interfaces-hypbmsec}{%
752     \expandafter\let\csname last#1title\endcsname\relax
753     \expandafter\let\csname last#1bookmark\endcsname\relax
754     \expandafter\let\csname last#1toc\endcsname\relax
755   }%
756}% \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.

```

757 %%-----
758 %%   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
759 \def\itf@ttl@newsection#1#2{% #1=section, #2=/* or empty
760   \ifcsundef{#1}% sectionning command undefined: temporarily defined in straight class
761     {\itf@ttl@createsection{#1}}
762     {}%
763   \ifblank{#2}{%
764     \pgfqkeys{/itf/titlesec/#1}{% these keys do not exist for starred sections
765       class/.code=\itf@ttl@titleclass{#1}##1[]\@nil,% with \@addtoreset
766       class/.value required,%                               if sup-level is given
767       class*/.code=\itf@ttl@titleclass*{#1}##1[]\@nil,% without \@addtoreset
768       class*/.value required,%                               even if sup-level is given
769       shape/.initial=,% initial shapes set by titlesec.sty for not numbered sections.
770       the#1/.store in cs=the#1,%
771       the#1/.default=\pgfkeysvalueof{/itf/titlesec/#1/label},%
772     }%
773     {% starred section: unless titlesec, we do not put the default shape to hang,
774     \pgfkeysifdefined{/itf/titlesec/#1/shape}%but to the shape of the not starred
775       {\pgfkeysgetvalue{/itf/titlesec/#1/shape}\itf@tp}% sectionning command
776       {\def\itf@tp{hang}}}%
777     \pgfkeyslet{/itf/titlesec/#1#2/shape}\itf@tp%
778     }%
779   \pgfqkeys{/itf/titlesec/#1#2}{%
780     shape/.value required,%
781     shape@cs/.initial=
782       \csname ttlh@\pgfkeysvalueof{/itf/titlesec/#1#2/shape}\endcsname,% constant
783     shape@cs/.is private=interfaces-titlesec,% constant
784     font/.store as code,%
785     format/.alias*=font,%
786     label/.store as code,%
787     sep/.estore as glue,%
788     labelsep/.alias*=sep,%
789     before/.store as code,%
790     before@cmd/.is private=interfaces-titlesec,%
791     after/.store as code,%
792     indent first/.true=\pgfkeyssetvalue{/itf/titlesec/#1#2/indent first}{\@ne},%
793     indent first/.false=\pgfkeyssetvalue{/itf/titlesec/#1#2/indent first}{\z@},%
794     identfirst/.alias=indent first,%
795     indent first=true,%
796     left/.estore as glue,%
797     top/.estore as glue,%
798     bottom/.estore as glue,%
799     right/.estore as glue,%
800     break/.code=\ifblank{#1}
801       {\cslet{#1break}\@empty}
802       {\protected\csdef{#1break}{##1}},%
803     break*/.code=\protected\csappto{#1break}{##1},%
804     break+/.alias=break*,%
805     mark/.code=\ifblank{#1}
806       {\cslet{#1mark}\@gobble}
807       {\protected\long\csdef{#1mark}####1{##1}},%
808     mark/.default=,%
809   }% \pgfkeys
810   \ifblank{#2}{% no default marks for starred (numberless) \section*
811     \itf@AfterPackage{interfaces-marks}{% requires interfaces-marks
812       \pgfkeys{/itf/titlesec/#1/mark/.default=\markthe{#1}{##1}}%
813     }% AfterPackage interfaces-mark
814     \itf@AfterPackage{interfaces-bookmark}{% requires interfaces-bookmark
815       \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{ttl@#1}{99}{\csuse{ttl@#1}},%
819 bookmark/level/.blank=\ifcsvoid{toclevel@#1}
820 {\ifcsvoid{ttl@#1}{99}{\csuse{ttl@#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 sectioning command.

```

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

```

```

876 \itf@AfterPackage{interfaces-bookmark}{%
877   \itf@patch\itf@preapptocmd\addcontentsline           % #2=section name in
878     {\begingroup\itf@ttl@BKM{/itf/titlesec/#2/bookmark}}% \addcontentsline
879     {\endgroup}
880     {\@PackageInfoNoLine{interfaces-titlesec}
881      {\string\addcontentsline\space successfully patched!}}
882     {\@PackageWarningNoLine{interfaces-titlesec}
883      {Patch of \string\addcontentsline\space failed
884       \MessageBreak bookmark-style specs for sections
885       \MessageBreak will be unavailable}}}%
886}% AfterPackage interfaces-bookmark
887 \catcode'\#=6
888 \def\itf@ttl@BKM#1{%
889   \pgfkeysifdefined{#1/.@cmd}
890   {%
891     \edef\itf@tp{% do nothing if the keys are not set (shortcut)
892       \pgfkeysvalueof{#1/bold}%
893       \pgfkeysvalueof{#1/bold*}%
894       \pgfkeysvalueof{#1/italic}%
895       \pgfkeysvalueof{#1/italic*}%
896       \pgfkeysvalueof{#1/color}%
897       \pgfkeysvalueof{#1/color*}%
898       \pgfkeysvalueof{#1/on}%
899       \pgfkeysvalueof{#1/on*}%
900       \pgfkeysvalueof{#1/style}}}%
901   \ifx\itf@tp\@empty
902   \else
903     \global\pgfkeyslet{#1/bold*}\@empty
904     \global\pgfkeyslet{#1/italic*}\@empty
905     \global\pgfkeyslet{#1/color*}\@empty
906     \global\pgfkeyslet{#1/on*}\@empty
907     \expandafter\bookmarksetup\expandafter{\itf@tp}%
908     \pgfkeysifdefined{/itf/bookmark/*}%
909     {% \bookmarksetup{color*=} overwrites \sectionformat...{bookmark/color*=}
910      \pgfkeysgetvalue{/itf/bookmark/*}\itf@tp
911      \expandafter\bookmarksetup\expandafter{\itf@tp}%
912      }
913     {}%
914   \fi}
915   {}%
916}% \itf@ttl@BKM

```

### 21.5.4 `\bottomtitles`

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

```

917 %-----
918 %   b o t t o m t i t l e s
919 \newrobustcmd*\bottomtitles{\@ifnextchar\bgroup
920   \itf@setbottomtitlespace
921   {\afterassignment\itf@set@bottomtitle@space\itf@sk}%
922}% \bottomtitles
923 \def\itf@setbottomtitlespace#1{%
924   \@defaultunits\itf@sk#1\textheight\relax\@nnil
925   \itf@set@bottomtitle@space
926}% \itf@setbottomtitlespace
927 \def\itf@set@bottomtitle@space{\xdef\bottomtitlespace{\the\dimexpr\itf@sk}}
928 </titlesec>

```

## 21.6 † Interface `hyperref`

```

929 <*hyperref>
930 \ProvidesPackage{interfaces-hyperref}
931   [2011/02/12 v3.0 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   [2011/02/12 v3.0 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}},%

```

```

979 bold*/.false=\pgfqkeys{/itf/bookmark}{@save={bold=false}},%
980 bold*/@blank/.code=\pgfqkeys{/itf/bookmark/@restore}{bold},%
981 bold*/.blank=@blank,%
982 italic*/.true=\pgfqkeys{/itf/bookmark}{@save={italic=true}},%
983 italic*/.false=\pgfkeys{/itf/bookmark}{@save={italic=false}},%
984 italic*/@blank/.code=\pgfqkeys{/itf/bookmark/@restore}{italic},%
985 italic*/.blank=@blank,%
986 color*/.code={\ifblank{#1}
987   {\pgfqkeys{/itf/bookmark/@restore}{color}}
988   {\pgfqkeys{/itf/bookmark}{@save={color={#1}}}}}%
989 },%
990 @save/.code={%
991   \pgfkeysifdefined{/itf/bookmark/@save/color}{}
992   {\pgfkeyslet{/itf/bookmark/@save/color}\BKM@color}%
993   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}{}
994   {\pgfkeyslet{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}%
995   \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}{}
996   {\pgfkeysEsetvalue{/itf/bookmark/@save/grouplevel}{\the\currentgrouplevel}}%
997   \pgfkeysaddvalue{/itf/bookmark/*}{{},#1}%
998   \bookmarksetup{#1}%
999 },%
1000 @restore/color/.code=%
1001   \pgfkeysifdefined{/itf/bookmark/@save/color}
1002   {\pgfkeysgetvalue{/itf/bookmark/@save/color}\BKM@color}
1003   {},%
1004 @restore/FontStyle/.code=%
1005   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}
1006   {\pgfkeysgetvalue{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}
1007   {},%
1008 @restore/.code={%
1009   \pgfkeysifdefined{/itf/bookmark/@save/color}
1010   {\pgfkeysgetvalue{/itf/bookmark/@save/color}\BKM@color}
1011   {}%
1012   \pgfkeysifdefined{/itf/bookmark/@save/FontStyle}
1013   {\pgfkeysgetvalue{/itf/bookmark/@save/FontStyle}\BS@BKM@FontStyle}
1014   {}%
1015   \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}
1016   {% shortcut: \bookmarksetup{bold*} called inside main group (level 0)
1017   \ifnum\pgfkeysvalueof{/itf/bookmark/@save/grouplevel}=\z@
1018     \global\pgfkeyslet{/itf/bookmark/@save/FontStyle}\@undefined
1019     \global\pgfkeyslet{/itf/bookmark/@save/color}\@undefined
1020     \global\pgfkeyslet{/itf/bookmark/@save/grouplevel}\@undefined
1021     \global\pgfkeyslet{/itf/bookmark/*}\@undefined
1022     \global\let\BKM@color\BKM@color
1023     \global\let\BS@BKM@FontStyle\BS@BKM@FontStyle
1024   \else % restore after each group as needed
1025     \pgfkeyslet{/itf/bookmark/@save/FontStyle}\@undefined
1026     \pgfkeyslet{/itf/bookmark/@save/color}\@undefined
1027     \pgfkeyslet{/itf/bookmark/*}\@undefined
1028     \ifnum\currentgrouplevel>\z@
1029       \aftergroup\itf@BKM@restore
1030     \else
1031       \pgfkeyslet{/itf/bookmark/@save/grouplevel}\@undefined
1032     \fi\fi
1033   }
1034   {}%
1035 },%
1036 @restore/bold/.code={% bold is "hidden" in \BS@BKM@FontStyle
1037   \begingroup
1038     \edef\itf@tp{\bookmarkget{bold}}%
1039     \pgfqkeys{/itf/bookmark/@restore}{FontStyle}%
1040     \count@=\bookmarkget{bold}%
1041     \edef\itf@tp{\endgroup
1042       \ifnum\itf@tp=\count@
1043         \else \noexpand\bookmarksetup{%

```

```

1044             bold\ifcase\count@ =false\fi}\fi
1045         }\itf@tp},%
1046     @restore/italic/.code={% italic is "hidden" in \BS@BKM@FontStyle
1047         \beginngroup
1048             \edef\itf@tp{\bookmarkget{italic}}%
1049             \pgfqkeys{/itf/bookmark/@restore}{FontStyle}%
1050             \count@=\bookmarkget{italic}%
1051             \edef\itf@tp{\endgroup
1052                 \ifnum\itf@tp=\count@
1053                     \else \noexpand\bookmarksetup{%
1054                         italic\ifcase\count@ =false\fi}\fi
1055                 }\itf@tp},%
1056 }
1057 \def\itf@BKM@restore{%
1058     \pgfkeysifdefined{/itf/bookmark/@save/grouplevel}
1059     {\pgfkeysalso{/itf/bookmark/@restore}}
1060     {}%
1061 }% \itf@BKM@restore
1062 %% Plug the BKM keys in the interfaces pgfkeys (not efficient but quickly written...)
1063 \define@key{BKM}{disable}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/disable={#1}}}
1064 \define@key{BKM}{disable*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/disable*={#1}}}
1065 \define@key{BKM}{bold*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/bold*={#1}}}
1066 \define@key{BKM}{italic*}[true]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/italic*={#1}}}
1067 \define@key{BKM}{color*}[]{\itf@pgfkeys\pgfkeysalso{/itf/bookmark/color*={#1}}}
1068 \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.

```

1069 \def\itf@BKM@write#1{%
1070     \aftergroup\itf@BKM@restore
1071     \ifcase\itf@BKM@enable
1072         \global\let\itf@BKM@enable\@ne
1073     \or
1074         \immediate\write\@mainaux{#1}%
1075     \else
1076         \ifcase -\itf@BKM@enable % (case -0 = 0 tested before)
1077             \or % (case -1 = enable but At End)
1078                 \let\itf@BKM@enable\@ne
1079                 \edef\itf@tp{\immediate\write\@mainaux{#1}}%
1080                 \expandafter\BookmarkAtEnd\expandafter{\itf@tp}%
1081             \fi
1082         \fi
1083 }% \itf@BKM@write

```

### 21.7.2 ref and pageref keys

\itf@BKM@pageref

```

1084 %% pageref= key for \bookmark (using refcount : \getpagerefnumber)
1085 \def\itf@BKM@pageref[#1]{%
1086     \expandafter\itf@BKM@@pageref
1087     \csname r@#1\endcsname{#1}%
1088 }% \itf@BKM@pageref
1089 \def\itf@BKM@@pageref#1#2{%
1090     \ifx#1\relax
1091         \protect\G@refundefinedtrue
1092         \@latex@warning{%
1093             Hyper reference ‘#2’ on page \thepage \space undefined
1094             \MessageBreak for bookmark destination page
1095         }%
1096     \fi
1097     \edef\BKM@page{\getrefbykeydefault{#2}{page}{1}}%
1098 }% \itf@BKM@pageref
1099 \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  [2011/02/12 v3.0 lastsection,title,anchor, etc. (FC)]
1124\RequirePackage{interfaces-base}
1125\RequirePackage{getttitlestring}
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    Update de values of \lastsectiontitle etc. for non-starred sections:

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

```



```

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`, `\lastsubsection toc` *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`**

```

1260 <fancyhdr>
1261 \ProvidesPackage{interfaces-fancyhdr}
1262 [2011/02/12 v3.0 pgfkeys macros for fancyhdr (FC)]
1263 \RequirePackage{interfaces-base}
1264 \itf@Check@Package{fancyhdr}
1265 \robustify\fancyhf
1266 \robustify\fancyhfoffset

```

**21.9.1 `\pagesetup`**`\pagesetup`

```

1267 \newrobustcmd*\pagesetup{%
1268   \let\fancy@gb\relax % Just in case...
1269   \@ifstar
1270     {\itf@pagesetup{}}
1271     {\itf@pagesetup{reset,}}%
1272 }% \pagesetup
1273 \def\itf@pagesetup#1{\@testopt
1274   {\itf@pagesetup{#1}}}%
1275 }% \itf@pagesetup
1276 \def\itf@pagesetup#1[#2]#3{\ifblank{#2}
1277   {% modifies the current page style
1278     \itf@pgfkeys\pgfkeys{/itf/fancyhdr}{#1#3}\relax\ps@@fancy}%
1279   {% defines or modifies a given page style
1280     \ifblank{#1}
1281       \csappto% star form: keep existing value (if not overwritten)
1282       \csdef% no star form: overwrite (+ reset at \pagestyle time)
1283       {ps@#2}{\itf@pgfkeys\pgfkeys{/itf/fancyhdr}{#1#3}\relax\ps@@fancy}%
1284     }%
1285 }% \itf@pagesetup
1286 \pgfkeys{/itf/pagesetup}{%
1287   @current/.is private=interfaces-fancyhdr,%
1288   @style/.is private=interfaces-fancyhdr,%
1289 }

```

`\pagestyle`

```

1290 \renewrobustcmd*\pagestyle[1]{\ifcsundef{ps@#1}
1291   {\itf@undefinedpagestyle{#1}}
1292   {\csname ps@#1\endcsname}%
1293 }% \pagestyle

```

`\thispagestyle`

```

1294 \renewrobustcmd*\thispagestyle[1]{\ifcsundef{ps@#1}
1295   {\itf@undefinedpagestyle{#1}}
1296   {\global\@specialpagetrue\gdef\@specialstyle{#1}}%
1297 }% \thispagestyle
1298 \newcommand*\itf@undefinedpagestyle[1]{%
1299   \@latex@error{Undefined page style: #1
1300   \MessageBreak your command will be ignored}\@eha
1301 }% \itf@undefinedpagestyle

```

**21.9.2 Keys for `\pagesetup`**

```

1302 \pgfkeys{%
1303   /handlers/.fancy@hf/.code=%
1304     \edef\itf@tp{\pgfkeyscurrentpath}%
1305     \pgfkeysalso{\pgfkeyscurrentpath/.store as code}%
1306     \pgfkeysalso{\pgfkeyscurrentpath/.append code/.expanded=%
1307       \csdef{f@ncy#1}{%
1308         \noexpand\pgfkeysvalueof{\itf@tp/font}
1309         \noexpand\pgfkeysvalueof{\itf@tp}\noexpand\strut}},%

```

```

1310}% handler for fancyhdr interface
1311\pgfqkeys{/itf/fancyhdr}{% keys for \pagesetup
1312  code/.code={#1},% execution at expansion of \ps@... => \pgfqkeys{...,code={...},...}
1313  pagestyle/.style={code=\pagestyle{#1}},%
1314  page style/.alias=pagestyle,%
1315  load style/.alias=pagestyle,%
1316  head/rule/.store as dimen in cs=headrulewidth,%
1317  head/rule/.default=.4pt,%
1318  head/rule/.blank=\z@,%
1319  head/rulewidth/.alias*=head/rule,%
1320  headrulewidth/.alias*=head/rule,%
1321  head/rule/width/.alias*=head/rule,%
1322  head/rule/font/.store as code,%
1323  head/rule/color/.style={head/rule/font+=\color{#1}},%
1324  headruler/.code=%
1325    \let\headrule\pgfkeyscurrentvalue
1326    \ifx\headrule\@empty\else
1327      \preto\headrule{\bgroup\pgfkeysvalueof{/itf/fancyhdr/head/rule/font}}%
1328      \appto\headrule{\egroup}%
1329    \fi,%
1330  headruler/.default=%
1331    \if@fancyplain\let\headrulewidth\plainheadrulewidth\fi
1332    \hrule\@height\headrulewidth \@width\headwidth
1333    \vskip-\headrulewidth\relax,%
1334  headrule/.alias=headruler,%
1335  headrule,% sets default
1336  foot/rule/.store as dimen in cs=footrulewidth,%
1337  foot/rule/.default=.4pt,%
1338  foot/rule/.blank=\z@,%
1339  foot/rulewidth/.alias*=foot/rule,%
1340  footrulewidth/.alias*=foot/rule,%
1341  foot/rule/width/.alias*=foot/rule,%
1342  foot/rule/font/.store as code,%
1343  foot/rule/color/.style={foot/rule/font+=\color{#1}},%
1344  footruler/.code=%
1345    \let\footrule\pgfkeyscurrentvalue
1346    \ifx\footrule\@empty\else
1347      \preto\footrule{\bgroup\pgfkeysvalueof{/itf/fancyhdr/head/rule/font}}%
1348      \appto\footrule{\egroup}%
1349    \fi,%
1350  footruler/.default=%
1351    \if@fancyplain\let\footrulewidth\plainfootrulewidth\fi
1352    \vskip-2\footrulewidth
1353    \hrule\@height\footrulewidth \@width\headwidth\vskip\footrulewidth,%
1354  footrule/.alias=footruler,%
1355  footrule,% sets default
1356  rule/.style={head/rule={#1}, foot/rule={#1}},%
1357  rule+/.style={head/rule+={#1}, foot/rule+={#1}},%
1358  rule-/.style={head/rule-={#1}, foot/rule-={#1}},%
1359  rule*/.style={head/rule*={#1}, foot/rule*={#1}},%
1360  rules/.alias*=rule,rulewidth/.alias*=rule,%
1361  rule/width/.alias*=rule,rules/width/.alias*=rule,%
1362  norule/.style={rule=\z@},%
1363  norule/.value forbidden,%
1364  norules/.alias=norule,%
1365  rule/font/.style={head/rule/font={#1}, foot/rule/font={#1}},%
1366  rule/font+/.style={head/rule/font+={#1}, foot/rule/font+={#1}},%
1367  rule/font*/.alias=rule/font+,%
1368  rules/font/.alias=rule/font,%
1369  rules/font+/.alias=rule/font+,%
1370  rules/font*/.alias=rule/font+,%
1371  rule/color/.style={head/rule/color={#1}, foot/rule/color={#1}},%
1372  rules/color/.alias=rule/color,%
1373  foot/rule/skip/.estore as glue in cs=footruleskip,%
1374  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,%

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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,%

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1505         odd/center/head/.alias*=head/center/odd,%
1506         center/odd/head/.alias*=head/center/odd,%
1507         center/head/odd/.alias*=head/center/odd,%
1508         head/odd/center/font/.alias*=head/center/odd/font,%
1509         odd/head/center/font/.alias*=head/center/odd/font,%
1510         odd/center/head/font/.alias*=head/center/odd/font,%
1511         center/odd/head/font/.alias*=head/center/odd/font,%
1512         center/head/odd/font/.alias*=head/center/odd/font,%
1513         head/odd/center/color/.alias*=head/center/odd/color,%
1514         odd/head/center/color/.alias*=head/center/odd/color,%
1515         odd/center/head/color/.alias*=head/center/odd/color,%
1516         center/odd/head/color/.alias*=head/center/odd/color,%
1517         center/head/odd/color/.alias*=head/center/odd/color,%
1518     head/right/odd/.fancy@hf=orh,%
1519     head/right/odd/font/.store as code,%
1520     head/right/odd/color/.style={head/right/odd/font+=\color{#1}},%
1521         head/odd/right/.alias*=head/right/odd,%
1522         odd/head/right/.alias*=head/right/odd,%
1523         odd/right/head/.alias*=head/right/odd,%
1524         right/odd/head/.alias*=head/right/odd,%
1525         right/head/odd/.alias*=head/right/odd,%
1526         head/odd/right/font/.alias*=head/right/odd/font,%
1527         odd/head/right/font/.alias*=head/right/odd/font,%
1528         odd/right/head/font/.alias*=head/right/odd/font,%
1529         right/odd/head/font/.alias*=head/right/odd/font,%
1530         right/head/odd/font/.alias*=head/right/odd/font,%
1531         head/odd/right/color/.alias*=head/right/odd/color,%
1532         odd/head/right/color/.alias*=head/right/odd/color,%
1533         odd/right/head/color/.alias*=head/right/odd/color,%
1534         right/odd/head/color/.alias*=head/right/odd/color,%
1535         right/head/odd/color/.alias*=head/right/odd/color,%
1536     head/left/even/.fancy@hf=elh,%
1537     head/left/even/font/.store as code,%
1538     head/left/even/color/.style={head/left/even/font+=\color{#1}},%
1539         head/even/left/.alias*=head/left/even,%
1540         even/head/left/.alias*=head/left/even,%
1541         even/left/head/.alias*=head/left/even,%
1542         left/even/head/.alias*=head/left/even,%
1543         left/head/even/.alias*=head/left/even,%
1544         head/even/left/font/.alias*=head/left/even/font,%
1545         even/head/left/font/.alias*=head/left/even/font,%
1546         even/left/head/font/.alias*=head/left/even/font,%
1547         left/even/head/font/.alias*=head/left/even/font,%
1548         left/head/even/font/.alias*=head/left/even/font,%
1549         head/even/left/color/.alias*=head/left/even/color,%
1550         even/head/left/color/.alias*=head/left/even/color,%
1551         even/left/head/color/.alias*=head/left/even/color,%
1552         left/even/head/color/.alias*=head/left/even/color,%
1553         left/head/even/color/.alias*=head/left/even/color,%
1554     head/center/even/.fancy@hf=ech,%
1555     head/center/even/font/.store as code,%
1556     head/center/even/color/.style={head/center/even/font+=\color{#1}},%
1557         head/even/center/.alias*=head/center/even,%
1558         even/head/center/.alias*=head/center/even,%
1559         even/center/head/.alias*=head/center/even,%
1560         center/even/head/.alias*=head/center/even,%
1561         center/head/even/.alias*=head/center/even,%
1562         head/even/center/font/.alias*=head/center/even/font,%
1563         even/head/center/font/.alias*=head/center/even/font,%
1564         even/center/head/font/.alias*=head/center/even/font,%
1565         center/even/head/font/.alias*=head/center/even/font,%
1566         center/head/even/font/.alias*=head/center/even/font,%
1567         head/even/center/color/.alias*=head/center/even/color,%
1568         even/head/center/color/.alias*=head/center/even/color,%
1569         even/center/head/color/.alias*=head/center/even/color,%

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1570         center/even/head/color/.alias=head/center/even/color,%
1571         center/head/even/color/.alias=head/center/even/color,%
1572 head/right/even/.fancy@hf=erh,%
1573 head/right/even/font/.store as code,%
1574 head/right/even/color/.style={head/right/even/font+=\color{#1}},%
1575         head/even/right/.alias*=head/right/even,%
1576         even/head/right/.alias*=head/right/even,%
1577         even/right/head/.alias*=head/right/even,%
1578         right/even/head/.alias*=head/right/even,%
1579         right/head/even/.alias*=head/right/even,%
1580         head/even/right/font/.alias*=head/right/even/font,%
1581         even/head/right/font/.alias*=head/right/even/font,%
1582         even/right/head/font/.alias*=head/right/even/font,%
1583         right/even/head/font/.alias*=head/right/even/font,%
1584         right/head/even/font/.alias*=head/right/even/font,%
1585         head/even/right/color/.alias=head/right/even/color,%
1586         even/head/right/color/.alias=head/right/even/color,%
1587         even/right/head/color/.alias=head/right/even/color,%
1588         right/even/head/color/.alias=head/right/even/color,%
1589         right/head/even/color/.alias=head/right/even/color,%
1590 foot/left/odd/.fancy@hf=olf,%
1591 foot/left/odd/font/.store as code,%
1592 foot/left/odd/color/.style={foot/left/odd/font+=\color{#1}},%
1593         foot/odd/left/.alias*=foot/left/odd,%
1594         odd/foot/left/.alias*=foot/left/odd,%
1595         odd/left/foot/.alias*=foot/left/odd,%
1596         left/odd/foot/.alias*=foot/left/odd,%
1597         left/foot/odd/.alias*=foot/left/odd,%
1598         foot/odd/left/font/.alias*=foot/left/odd/font,%
1599         odd/foot/left/font/.alias*=foot/left/odd/font,%
1600         odd/left/foot/font/.alias*=foot/left/odd/font,%
1601         left/odd/foot/font/.alias*=foot/left/odd/font,%
1602         left/foot/odd/font/.alias*=foot/left/odd/font,%
1603         foot/odd/left/color/.alias=foot/left/odd/color,%
1604         odd/foot/left/color/.alias=foot/left/odd/color,%
1605         odd/left/foot/color/.alias=foot/left/odd/color,%
1606         left/odd/foot/color/.alias=foot/left/odd/color,%
1607         left/foot/odd/color/.alias=foot/left/odd/color,%
1608 foot/center/odd/.fancy@hf=ocf,%
1609 foot/center/odd/font/.store as code,%
1610 foot/center/odd/color/.style={foot/center/odd/font+=\color{#1}},%
1611         foot/odd/center/.alias*=foot/center/odd,%
1612         odd/foot/center/.alias*=foot/center/odd,%
1613         odd/center/foot/.alias*=foot/center/odd,%
1614         center/odd/foot/.alias*=foot/center/odd,%
1615         center/foot/odd/.alias*=foot/center/odd,%
1616         foot/odd/center/font/.alias*=foot/center/odd/font,%
1617         odd/foot/center/font/.alias*=foot/center/odd/font,%
1618         odd/center/foot/font/.alias*=foot/center/odd/font,%
1619         center/odd/foot/font/.alias*=foot/center/odd/font,%
1620         center/foot/odd/font/.alias*=foot/center/odd/font,%
1621         foot/odd/center/color/.alias=foot/center/odd/color,%
1622         odd/foot/center/color/.alias=foot/center/odd/color,%
1623         odd/center/foot/color/.alias=foot/center/odd/color,%
1624         center/odd/foot/color/.alias=foot/center/odd/color,%
1625         center/foot/odd/color/.alias=foot/center/odd/color,%
1626 foot/right/odd/.fancy@hf=orf,%
1627 foot/right/odd/font/.store as code,%
1628 foot/right/odd/color/.style={foot/right/odd/font+=\color{#1}},%
1629         foot/odd/right/.alias*=foot/right/odd,%
1630         odd/foot/right/.alias*=foot/right/odd,%
1631         odd/right/foot/.alias*=foot/right/odd,%
1632         right/odd/foot/.alias*=foot/right/odd,%
1633         right/foot/odd/.alias*=foot/right/odd,%
1634         foot/odd/right/font/.alias*=foot/right/odd/font,%

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1635         odd/foot/right/font/.alias*=foot/right/odd/font,%
1636         odd/right/foot/font/.alias*=foot/right/odd/font,%
1637         right/odd/foot/font/.alias*=foot/right/odd/font,%
1638         right/foot/odd/font/.alias*=foot/right/odd/font,%
1639         foot/odd/right/color/.alias=foot/right/odd/color,%
1640         odd/foot/right/color/.alias=foot/right/odd/color,%
1641         odd/right/foot/color/.alias=foot/right/odd/color,%
1642         right/odd/foot/color/.alias=foot/right/odd/color,%
1643         right/foot/odd/color/.alias=foot/right/odd/color,%
1644     foot/left/even/.fancy@hf=elf,%
1645     foot/left/even/font/.store as code,%
1646     foot/left/even/color/.style={foot/left/even/font+=\color{#1}},%
1647         foot/even/left/.alias*=foot/left/even,%
1648         even/foot/left/.alias*=foot/left/even,%
1649         even/left/foot/.alias*=foot/left/even,%
1650         left/even/foot/.alias*=foot/left/even,%
1651         left/foot/even/.alias*=foot/left/even,%
1652         foot/even/left/font/.alias*=foot/left/even/font,%
1653         even/foot/left/font/.alias*=foot/left/even/font,%
1654         even/left/foot/font/.alias*=foot/left/even/font,%
1655         left/even/foot/font/.alias*=foot/left/even/font,%
1656         left/foot/even/font/.alias*=foot/left/even/font,%
1657         foot/even/left/color/.alias=foot/left/even/color,%
1658         even/foot/left/color/.alias=foot/left/even/color,%
1659         even/left/foot/color/.alias=foot/left/even/color,%
1660         left/even/foot/color/.alias=foot/left/even/color,%
1661         left/foot/even/color/.alias=foot/left/even/color,%
1662     foot/center/even/.fancy@hf=ecf,%
1663     foot/center/even/font/.store as code,%
1664     foot/center/even/color/.style={foot/center/even/font+=\color{#1}},%
1665         foot/even/center/.alias*=foot/center/even,%
1666         even/foot/center/.alias*=foot/center/even,%
1667         even/center/foot/.alias*=foot/center/even,%
1668         center/even/foot/.alias*=foot/center/even,%
1669         center/foot/even/.alias*=foot/center/even,%
1670         foot/even/center/font/.alias*=foot/center/even/font,%
1671         even/foot/center/font/.alias*=foot/center/even/font,%
1672         even/center/foot/font/.alias*=foot/center/even/font,%
1673         center/even/foot/font/.alias*=foot/center/even/font,%
1674         center/foot/even/font/.alias*=foot/center/even/font,%
1675         foot/even/center/color/.alias=foot/center/even/color,%
1676         even/foot/center/color/.alias=foot/center/even/color,%
1677         even/center/foot/color/.alias=foot/center/even/color,%
1678         center/even/foot/color/.alias=foot/center/even/color,%
1679         center/foot/even/color/.alias=foot/center/even/color,%
1680     foot/right/even/.fancy@hf=erf,%
1681     foot/right/even/font/.store as code,%
1682     foot/right/even/color/.style={foot/right/even/font+=\color{#1}},%
1683         foot/even/right/.alias*=foot/right/even,%
1684         even/foot/right/.alias*=foot/right/even,%
1685         even/right/foot/.alias*=foot/right/even,%
1686         right/even/foot/.alias*=foot/right/even,%
1687         right/foot/even/.alias*=foot/right/even,%
1688         foot/even/right/font/.alias*=foot/right/even/font,%
1689         even/foot/right/font/.alias*=foot/right/even/font,%
1690         even/right/foot/font/.alias*=foot/right/even/font,%
1691         right/even/foot/font/.alias*=foot/right/even/font,%
1692         right/foot/even/font/.alias*=foot/right/even/font,%
1693         foot/even/right/color/.alias=foot/right/even/color,%
1694         even/foot/right/color/.alias=foot/right/even/color,%
1695         even/right/foot/color/.alias=foot/right/even/color,%
1696         right/even/foot/color/.alias=foot/right/even/color,%
1697         right/foot/even/color/.alias=foot/right/even/color,%
1698     foot/inner/.style={foot/right/even={#1},foot/left/odd={#1}},%
1699     foot/inner+/.style={foot/right/even+={#1},foot/left/odd+={#1}},%

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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}},%

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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}},%

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1830     head/right/offset+/.style={head/right/even/offset+=#{#1},head/right/odd/offset+=#{#1}},%
1831     head/right/offset-/.style={head/right/even/offset-=#{#1},head/right/odd/offset-=#{#1}},%
1832     head/right/offset*/.style={head/right/even/offset*=#{#1},head/right/odd/offset*=#{#1}},%
1833     head/offset/right/.alias*=head/right/offset,%
1834     right/head/offset/.alias*=head/right/offset,%
1835     right/offset/head/.alias*=head/right/offset,%
1836     offset/head/right/.alias*=head/right/offset,%
1837     offset/right/head/.alias*=head/right/offset,%
1838     foot/left/offset/.style={foot/left/even/offset=#{#1},foot/left/odd/offset=#{#1}},%
1839     foot/left/offset+/.style={foot/left/even/offset+=#{#1},foot/left/odd/offset+=#{#1}},%
1840     foot/left/offset-/.style={foot/left/even/offset-=#{#1},foot/left/odd/offset-=#{#1}},%
1841     foot/left/offset*/.style={foot/left/even/offset*=#{#1},foot/left/odd/offset*=#{#1}},%
1842     foot/offset/left/.alias*=foot/left/offset,%
1843     left/foot/offset/.alias*=foot/left/offset,%
1844     left/offset/foot/.alias*=foot/left/offset,%
1845     offset/foot/left/.alias*=foot/left/offset,%
1846     offset/left/foot/.alias*=foot/left/offset,%
1847     foot/right/offset/.style={foot/right/even/offset=#{#1},foot/right/odd/offset=#{#1}},%
1848     foot/right/offset+/.style={foot/right/even/offset+=#{#1},foot/right/odd/offset+=#{#1}},%
1849     foot/right/offset-/.style={foot/right/even/offset-=#{#1},foot/right/odd/offset-=#{#1}},%
1850     foot/right/offset*/.style={foot/right/even/offset*=#{#1},foot/right/odd/offset*=#{#1}},%
1851     foot/offset/right/.alias*=foot/right/offset,%
1852     right/foot/offset/.alias*=foot/right/offset,%
1853     right/offset/foot/.alias*=foot/right/offset,%
1854     offset/foot/right/.alias*=foot/right/offset,%
1855     offset/right/foot/.alias*=foot/right/offset,%
1856     head/left/even/offset/.store in skip cs=f@ncy0@elh,%
1857     head/left/even/offset/.append code=\fancy@setoffs,%
1858     head/even/offset/left/.alias*=head/left/even/offset,%
1859     head/even/left/offset/.alias*=head/left/even/offset,%
1860     head/offset/even/left/.alias*=head/left/even/offset,%
1861     head/offset/left/even/.alias*=head/left/even/offset,%
1862     head/left/offset/even/.alias*=head/left/even/offset,%
1863     left/head/offset/even/.alias*=head/left/even/offset,%
1864     left/head/even/offset/.alias*=head/left/even/offset,%
1865     left/offset/head/even/.alias*=head/left/even/offset,%
1866     left/offset/even/head/.alias*=head/left/even/offset,%
1867     left/even/offset/head/.alias*=head/left/even/offset,%
1868     left/even/head/offset/.alias*=head/left/even/offset,%
1869     even/head/offset/left/.alias*=head/left/even/offset,%
1870     even/head/left/offset/.alias*=head/left/even/offset,%
1871     even/offset/head/left/.alias*=head/left/even/offset,%
1872     even/offset/left/head/.alias*=head/left/even/offset,%
1873     even/left/offset/head/.alias*=head/left/even/offset,%
1874     even/left/head/offset/.alias*=head/left/even/offset,%
1875     offset/head/left/even/.alias*=head/left/even/offset,%
1876     offset/head/even/left/.alias*=head/left/even/offset,%
1877     offset/left/head/even/.alias*=head/left/even/offset,%
1878     offset/left/even/head/.alias*=head/left/even/offset,%
1879     offset/even/left/head/.alias*=head/left/even/offset,%
1880     offset/even/head/left/.alias*=head/left/even/offset,%
1881     head/left/odd/offset/.store in skip cs=f@ncy0@olh,%
1882     head/left/odd/offset/.append code=\fancy@setoffs,%
1883     head/odd/offset/left/.alias*=head/left/odd/offset,%
1884     head/odd/left/offset/.alias*=head/left/odd/offset,%
1885     head/offset/odd/left/.alias*=head/left/odd/offset,%
1886     head/offset/left/odd/.alias*=head/left/odd/offset,%
1887     head/left/offset/odd/.alias*=head/left/odd/offset,%
1888     left/head/offset/odd/.alias*=head/left/odd/offset,%
1889     left/head/odd/offset/.alias*=head/left/odd/offset,%
1890     left/offset/head/odd/.alias*=head/left/odd/offset,%
1891     left/offset/odd/head/.alias*=head/left/odd/offset,%
1892     left/odd/offset/head/.alias*=head/left/odd/offset,%
1893     left/odd/head/offset/.alias*=head/left/odd/offset,%
1894     odd/head/offset/left/.alias*=head/left/odd/offset,%

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1895         odd/head/left/offset/.alias*=head/left/odd/offset,%
1896         odd/offset/head/left/.alias*=head/left/odd/offset,%
1897         odd/offset/left/head/.alias*=head/left/odd/offset,%
1898         odd/left/offset/head/.alias*=head/left/odd/offset,%
1899         odd/left/head/offset/.alias*=head/left/odd/offset,%
1900         offset/head/left/odd/.alias*=head/left/odd/offset,%
1901         offset/head/odd/left/.alias*=head/left/odd/offset,%
1902         offset/left/head/odd/.alias*=head/left/odd/offset,%
1903         offset/left/odd/head/.alias*=head/left/odd/offset,%
1904         offset/odd/left/head/.alias*=head/left/odd/offset,%
1905         offset/odd/head/left/.alias*=head/left/odd/offset,%
1906     head/right/even/offset/.store in skip cs=fancy0@erh,%
1907         head/right/even/offset/.append code=\fancy@setoffs,%
1908         head/even/offset/right/.alias*=head/right/even/offset,%
1909         head/even/right/offset/.alias*=head/right/even/offset,%
1910         head/offset/even/right/.alias*=head/right/even/offset,%
1911         head/offset/right/even/.alias*=head/right/even/offset,%
1912         head/right/offset/even/.alias*=head/right/even/offset,%
1913         right/head/offset/even/.alias*=head/right/even/offset,%
1914         right/head/even/offset/.alias*=head/right/even/offset,%
1915         right/offset/head/even/.alias*=head/right/even/offset,%
1916         right/offset/even/head/.alias*=head/right/even/offset,%
1917         right/even/offset/head/.alias*=head/right/even/offset,%
1918         right/even/head/offset/.alias*=head/right/even/offset,%
1919         even/head/offset/right/.alias*=head/right/even/offset,%
1920         even/head/right/offset/.alias*=head/right/even/offset,%
1921         even/offset/head/right/.alias*=head/right/even/offset,%
1922         even/offset/right/head/.alias*=head/right/even/offset,%
1923         even/right/offset/head/.alias*=head/right/even/offset,%
1924         even/right/head/offset/.alias*=head/right/even/offset,%
1925         offset/head/right/even/.alias*=head/right/even/offset,%
1926         offset/head/even/right/.alias*=head/right/even/offset,%
1927         offset/right/head/even/.alias*=head/right/even/offset,%
1928         offset/right/even/head/.alias*=head/right/even/offset,%
1929         offset/even/right/head/.alias*=head/right/even/offset,%
1930         offset/even/head/right/.alias*=head/right/even/offset,%
1931     head/right/odd/offset/.store in skip cs=fancy0@orh,%
1932         head/right/odd/offset/.append code=\fancy@setoffs,%
1933         head/odd/offset/right/.alias*=head/right/odd/offset,%
1934         head/odd/right/offset/.alias*=head/right/odd/offset,%
1935         head/offset/odd/right/.alias*=head/right/odd/offset,%
1936         head/offset/right/odd/.alias*=head/right/odd/offset,%
1937         head/right/offset/odd/.alias*=head/right/odd/offset,%
1938         right/head/offset/odd/.alias*=head/right/odd/offset,%
1939         right/head/odd/offset/.alias*=head/right/odd/offset,%
1940         right/offset/head/odd/.alias*=head/right/odd/offset,%
1941         right/offset/odd/head/.alias*=head/right/odd/offset,%
1942         right/odd/offset/head/.alias*=head/right/odd/offset,%
1943         right/odd/head/offset/.alias*=head/right/odd/offset,%
1944         odd/head/offset/right/.alias*=head/right/odd/offset,%
1945         odd/head/right/offset/.alias*=head/right/odd/offset,%
1946         odd/offset/head/right/.alias*=head/right/odd/offset,%
1947         odd/offset/right/head/.alias*=head/right/odd/offset,%
1948         odd/right/offset/head/.alias*=head/right/odd/offset,%
1949         odd/right/head/offset/.alias*=head/right/odd/offset,%
1950         offset/head/right/odd/.alias*=head/right/odd/offset,%
1951         offset/head/odd/right/.alias*=head/right/odd/offset,%
1952         offset/right/head/odd/.alias*=head/right/odd/offset,%
1953         offset/right/odd/head/.alias*=head/right/odd/offset,%
1954         offset/odd/right/head/.alias*=head/right/odd/offset,%
1955         offset/odd/head/right/.alias*=head/right/odd/offset,%
1956     foot/left/even/offset/.store in skip cs=fancy0@elf,%
1957         foot/left/even/offset/.append code=\fancy@setoffs,%
1958         foot/even/offset/left/.alias*=foot/left/even/offset,%
1959         foot/even/left/offset/.alias*=foot/left/even/offset,%

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1960      foot/offset/even/left/.alias*=foot/left/even/offset,%
1961      foot/offset/left/even/.alias*=foot/left/even/offset,%
1962      foot/left/offset/even/.alias*=foot/left/even/offset,%
1963      left/foot/offset/even/.alias*=foot/left/even/offset,%
1964      left/foot/even/offset/.alias*=foot/left/even/offset,%
1965      left/offset/foot/even/.alias*=foot/left/even/offset,%
1966      left/offset/even/foot/.alias*=foot/left/even/offset,%
1967      left/even/offset/foot/.alias*=foot/left/even/offset,%
1968      left/even/foot/offset/.alias*=foot/left/even/offset,%
1969      even/foot/offset/left/.alias*=foot/left/even/offset,%
1970      even/foot/left/offset/.alias*=foot/left/even/offset,%
1971      even/offset/foot/left/.alias*=foot/left/even/offset,%
1972      even/offset/left/foot/.alias*=foot/left/even/offset,%
1973      even/left/offset/foot/.alias*=foot/left/even/offset,%
1974      even/left/foot/offset/.alias*=foot/left/even/offset,%
1975      offset/foot/left/even/.alias*=foot/left/even/offset,%
1976      offset/foot/even/left/.alias*=foot/left/even/offset,%
1977      offset/left/foot/even/.alias*=foot/left/even/offset,%
1978      offset/left/even/foot/.alias*=foot/left/even/offset,%
1979      offset/even/left/foot/.alias*=foot/left/even/offset,%
1980      offset/even/foot/left/.alias*=foot/left/even/offset,%
1981      foot/left/odd/offset/.store in skip cs=fancy0@olf,%
1982      foot/left/odd/offset/.append code=\fancy@setoffs,%
1983      foot/odd/offset/left/.alias*=foot/left/odd/offset,%
1984      foot/odd/left/offset/.alias*=foot/left/odd/offset,%
1985      foot/offset/odd/left/.alias*=foot/left/odd/offset,%
1986      foot/offset/left/odd/.alias*=foot/left/odd/offset,%
1987      foot/left/offset/odd/.alias*=foot/left/odd/offset,%
1988      left/foot/offset/odd/.alias*=foot/left/odd/offset,%
1989      left/foot/odd/offset/.alias*=foot/left/odd/offset,%
1990      left/offset/foot/odd/.alias*=foot/left/odd/offset,%
1991      left/offset/odd/foot/.alias*=foot/left/odd/offset,%
1992      left/odd/offset/foot/.alias*=foot/left/odd/offset,%
1993      left/odd/foot/offset/.alias*=foot/left/odd/offset,%
1994      odd/foot/offset/left/.alias*=foot/left/odd/offset,%
1995      odd/foot/left/offset/.alias*=foot/left/odd/offset,%
1996      odd/offset/foot/left/.alias*=foot/left/odd/offset,%
1997      odd/offset/left/foot/.alias*=foot/left/odd/offset,%
1998      odd/left/offset/foot/.alias*=foot/left/odd/offset,%
1999      odd/left/foot/offset/.alias*=foot/left/odd/offset,%
2000      offset/foot/left/odd/.alias*=foot/left/odd/offset,%
2001      offset/foot/odd/left/.alias*=foot/left/odd/offset,%
2002      offset/left/foot/odd/.alias*=foot/left/odd/offset,%
2003      offset/left/odd/foot/.alias*=foot/left/odd/offset,%
2004      offset/odd/left/foot/.alias*=foot/left/odd/offset,%
2005      offset/odd/foot/left/.alias*=foot/left/odd/offset,%
2006      foot/right/even/offset/.store in skip cs=fancy0@erf,%
2007      foot/right/even/offset/.append code=\fancy@setoffs,%
2008      foot/even/offset/right/.alias*=foot/right/even/offset,%
2009      foot/even/right/offset/.alias*=foot/right/even/offset,%
2010      foot/offset/even/right/.alias*=foot/right/even/offset,%
2011      foot/offset/right/even/.alias*=foot/right/even/offset,%
2012      foot/right/offset/even/.alias*=foot/right/even/offset,%
2013      right/foot/offset/even/.alias*=foot/right/even/offset,%
2014      right/foot/even/offset/.alias*=foot/right/even/offset,%
2015      right/offset/foot/even/.alias*=foot/right/even/offset,%
2016      right/offset/even/foot/.alias*=foot/right/even/offset,%
2017      right/even/offset/foot/.alias*=foot/right/even/offset,%
2018      right/even/foot/offset/.alias*=foot/right/even/offset,%
2019      even/foot/offset/right/.alias*=foot/right/even/offset,%
2020      even/foot/right/offset/.alias*=foot/right/even/offset,%
2021      even/offset/foot/right/.alias*=foot/right/even/offset,%
2022      even/offset/right/foot/.alias*=foot/right/even/offset,%
2023      even/right/offset/foot/.alias*=foot/right/even/offset,%
2024      even/right/foot/offset/.alias*=foot/right/even/offset,%

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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=fancy0@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 [2011/02/12 v3.0 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`

Purely expandable in exactly one step of expansion.

`\thebotmarks`

```

2138 \newcommand*\thebotmarks[1]{\romannumeral

```

`\thetopmarks`

```

2139   \ifcsname marks@#1\endcsname \expandafter\z@
2140   \firstmarks\csname marks@#1\expandafter\endcsname
2141   \else \expandafter\z@
2142   \fi

```

```

2143 }% \thefirstmarks
2144 \newcommand*\thebotmarks[1]{\romannumeral
2145   \ifcsname marks@#1\endcsname \expandafter\z@
2146     \botmarks\csname marks@#1\expandafter\endcsname
2147   \else \expandafter\z@
2148   \fi
2149 }% \thebotmarks
2150 \newcommand*\thetopmarks[1]{\romannumeral
2151   \ifcsname marks@#1\endcsname \expandafter\z@
2152     \topmarks\csname marks@#1\expandafter\endcsname
2153   \else \expandafter\z@
2154   \fi
2155 }% \thetopmarks

\getthemarks \getthemarks \firstmarks {\<named-mark>}\result

2156 %% \getthemarks\firstmarks{section}\macro
2157 \newrobustcmd*\getthemarks[3]{%
2158   \ifcsname marks@#2\endcsname
2159     \edef#3{\unexpanded\expandafter{#1\csname marks@#2\endcsname}}%
2160   \else \let#3\@undefined
2161   \fi
2162 }% \getthemarks

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

\getthebotmarks
\gethetopmarks
2163 \newrobustcmd*\getthefirstmarks{\getthemarks\firstmarks}
2164 \newrobustcmd*\getthebotmarks{\getthemarks\botmarks}
2165 \newrobustcmd*\gethetopmarks{\getthemarks\topmarks}

\ifmarksequal

2166 %% \ifmarksequal\firstmarks\botmarks{subsection}{ true }{ false }
2167 \newrobustcmd*\ifmarksequal[3]{%
2168   \begingroup
2169     \getthemarks{#1}{#3}\x
2170     \getthemarks{#2}{#3}\y
2171   \expandafter\endgroup
2172   \csname ltx@\ifdefined\x\ifdefined\y
2173     \ifx\x\y first\else
2174       second\fi\else second\fi\else second\fi
2175   oftwo\endcsname
2176 }% \ifmarksequal

2177 </marks>

```

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

```

2178 <*\tocloft>
2179 \ProvidesPackage{interfaces-tocloft}
2180 [2011/02/12 v3.0 pgfkeys macros for tocloft (FC)]
2181 \RequirePackage{interfaces-base}
2182 \itf@Check@Package{tocloft}

\tocsetup The user commands.
\lofsetup
\lotsetup
\listofsetup
2183 \newrobustcmd\tocsetup[1]{%
2184   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/toc}{#1}}%
2185 }% \tocsetup
2186 \newrobustcmd\lofsetup[1]{%
2187   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/lof}{#1}}%
2188 }% \lofsetup
2189 \newrobustcmd\lotsetup[1]{%
2190   \AfterPreamble{\itf@pgfkeys\pgfqkeys{/itf/tocloft/lot}{#1}}%
2191 }% \lotsetup
2192 \newrobustcmd\listofsetup[2]{%

```

```

2193 \AfterPreamble{\itf@pgfkeys\pgfkeys{/itf/tocloft/#1}{#2}}%
2194}% \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`.

```

2195 \def\itf@cft@newlistof#1#2#3{% #1=toc/lof (ext.), #2=entry (\newlistof only), #3=title (\newl
2196 \pgfkeys{/itf/tocloft/#1}{%
2197   depth/.store in counter cs=c@#1depth,%
2198   depth/.append code=\expandafter\global\csname c@#1depth\endcsname
2199                       \csname c@#1depth\endcsname
2200                       \addtocontents{#1}{\csname c@#1depth\endcsname
2201                                   \the\csname c@#1depth\endcsname\relax},%
2202   #1depth/.alias*=depth,%
2203   pagestyle/.code=\tocloftpagestyle{##1},%
2204   parskip/.store in skip cs=cftparskip,%
2205   parsep/.alias=parskip,%
2206   mark/.store in cs=cftmark#1,%
2207   marks/.alias=mark,%
2208   mark=,%
2209   label/.store as code,%
2210   ref/.store as code,%
2211   ref/.initial=\csname cft#1title\endcsname,% overwritten (toc,lof,lot)
2212   ref/.default=\csname cft#1title\endcsname,% overwritten (toc,lof,lot)
2213   ref/.blank=\pgfkeysnovalue,%
2214   title/.store as code in cs=cft#1title,% overwritten below for toc, lof and lot
2215   title/top/.store in skip cs=cftbefore#1titleskip,%
2216   beforetitleskip/.alias*=title/top,%
2217   title/bottom/.store in skip cs=cftafter#1titleskip,%
2218   aftertitleskip/.alias*=title/bottom,%
2219   title/skip/.alias*=title/bottom,%
2220   title/font/.store as code in cs=cft#1titlefont,%
2221   title/format/.alias*=title/font,%
2222   title/color/.store as color,%
2223   title/color/.append code=\pgfkeysalso{/itf/tocloft/#1/title/font+={%
2224       \color{\pgfkeysvalueof{/itf/tocloft/#1/title/color}}},%
2225   title/font/color/.alias=title/color,%
2226   title/format/color/.alias=title/color,%
2227   title/after/.store as code in cs=cftafter#1title,%
2228   title/command/.code=\csdef{@cftmake#1title}####1{##1},%
2229   dotsep/.code=\itf@units@mu\itf@musk{##1}% converts to mu
2230       \edef\cftdotsep{\itf@strip@mu\itf@musk},%
2231   dotsep/.default=4.5mu,%
2232   dotsep/.blank=\cftnodots,%
2233   dot/.store in=\cftdot,%
2234   before/.store as code,%
2235   after/.store as code,%
2236   columns/before@hook/.is private=interfaces-tocloft,%
2237   columns/after@hook/.is private=interfaces-tocloft,%
2238   columns/before@hook/.initial=,%
2239   columns/after@hook/.initial=,%
2240   columns/.code={\ltx@ifpackageloaded{multicol}}{%
2241       \pgfkeyssetvalue\pgfkeyscurrentkey{\number##1}%
2242       \ifnum\number##1>\@ne
2243         \pgfkeysgetvalue{/itf/tocloft/#1/columns/before@hook}\itf@tp
2244         \ifx \itf@tp\@empty
2245           \pgfkeyssetvalue{/itf/tocloft/#1/columns/before@hook}{%
2246             \begingroup
2247             \multicolsep\pgfkeysvalueof{/itf/tocloft/#1/multicolsep}\relax
2248             \columnsep\pgfkeysvalueof{/itf/tocloft/#1/columns/sep}\relax
2249             \columnseprule\pgfkeysvalueof{/itf/tocloft/#1/columns/rule}\relax
2250             \pgfkeysvalueof{/itf/tocloft/#1/multicols/beforebegin}%
2251             \def\itf@tocloft@aftermulticols{%
2252               \pgfkeysvalueof{/itf/tocloft/#1/multicols/afterend}}%
2253             \begin{multicols}{\pgfkeysvalueof{/itf/tocloft/#1/columns}}%

```

```

2254             \pgfkeysgetvalue{/itf/tocloft/#1/columns/rule/color}\columnseprulecolor
2255             \pgfkeysvalueof{/itf/tocloft/#1/multicols/afterbegin}%
2256         }%
2257         \pgfkeyssetvalue{/itf/tocloft/#1/columns/after@hook}{%
2258             \pgfkeysvalueof{/itf/tocloft/#1/multicols/beforeend}%
2259             \aftergroup\itf@tocloft@aftermulticols
2260             \end{multicols}%
2261         \endgroup
2262     }%
2263     \fi
2264     \else
2265         \pgfkeyslet\pgfkeyscurrentkey\@ne
2266         \pgfkeyslet{/itf/tocloft/#1/columns/before@hook}\@empty
2267         \pgfkeyslet{/itf/tocloft/#1/columns/after@hook}\@empty
2268     \fi}
2269     {\PackageError{interfaces-tocloft}
2270         {Key ‘columns’: package multicol is required}\@eha}%
2271 },%
2272 columns/.default=2,columns/.blank=1,%
2273 multicol/.alias=columns,%
2274 multicols/.alias=columns,%
2275 twocolumns/.true=\pgfkeysalso{columns=2},%
2276 twocolumns/.false=\pgfkeysalso{columns=1},%
2277 columns/rule/.estore as dimen,%
2278 columns/rule/.default=\columnseprule,%
2279 columns/rule,% assign default
2280     columnseprule/.alias*=columns/rule,%
2281     columns/rule/width/.alias*=columns/rule,%
2282 columns/sep/.estore as dimen,%
2283 columns/sep/.default=\columnsep,%
2284 columns/sep/.blank=10\p@,%
2285 columns/sep,% assign default
2286     columnsep/.alias*=columns/sep,%
2287 columns/rule/color/.store as color command,%
2288 columns/rule/color,% assign default (\normalcolor)
2289     columnseprulecolor/.alias*=columns/rule/color,%
2290     columns/rulecolor/.alias*=columns/rule/color,%
2291     columns/color/.alias*=columns/rule/color,%
2292 multicolsep/.estore as glue,%
2293 multicolsep/.default=0pt plus4pt minus3pt,%
2294 multicolsep,% sets default
2295 milticols/beforebegin/.initial=,multicols/beforebegin/.default=,%
2296 multicols/afterbegin/.initial=,multicols/afterbegin/.default=,%
2297 multicols/begin/.alias=multicols/afterbegin,%
2298 multicols/before/.alias=multicols/afterbegin,%
2299 multicols/beforeend/.initial=,multicols/beforeend/.default=,%
2300 multicols/afterend/.initial=,multicols/afterend/.default=,%
2301 multicols/end/.alias=multicols/beforeend,%
2302 multicols/after/.alias=multicols/beforeend,%
2303 }% \pgfkeys
2304 \itf@AfterPackage{interfaces-bookmark}{%
2305 \def\itf@tocloft@bookmark@handler##1##2{%
2306     \pgfkeysEaddvalue{/itf/tocloft/##1/bookmark}{},{##2}%
2307     \pgfkeysgetvalue{/itf/tocloft/##1/bookmark/text}\itf@tp
2308     \ifx \itf@tp\@empty
2309         \pgfkeyssetvalue{/itf/tocloft/##1/bookmark/text}\contentsname \fi}%
2310 \pgfqkeys{/itf/tocloft/#1}{%
2311     bookmark/.is multiple choice,%
2312     bookmark/bold/.true=\itf@tocloft@bookmark@handler{#1}{bold=true},%
2313     bookmark/bold/.false=\itf@tocloft@bookmark@handler{#1}{bold=false},%
2314     bookmark/italic/.true=\itf@tocloft@bookmark@handler{#1}{italic=true},%
2315     bookmark/italic/.false=\itf@tocloft@bookmark@handler{#1}{italic=false},%
2316     bookmark/color/.code=\itf@tocloft@bookmark@handler{#1}{color={##1}},%
2317     bookmark/level/.code=\pgfkeysEsetvalue{/itf/tocloft/#1/bookmark/level}{%
2318         \ifcsname toclevel@##1\endcsname

```



```

2319             \csname toplevel@##1\endcsname
2320             \else##1\fi}%
2321             \itf@tocloft@bookmark@handler{#1}{},%
2322             bookmark/level/.default=-1,%
2323             bookmark/level/.initial=-1,%
2324             bookmark/text/.store as code,%
2325             bookmark/text/.default=\contentsname,%
2326             bookmark/.unknown/.code=\pgfkeysEaddvalue{/itf/tocloft/#1/bookmark}
2327                                     {{{\pgfkeyscurrentname={##1}}},%
2328             bookmark/.initial=,%
2329 }% \pgfkeys
2330 }% AfterPackage interfaces-bookmark
2331 %% while making a format \jobname is expanded to the name of the format...
2332 %% Therefore, the following commands must be expanded \AtEndPreamble
2333 \AfterPreamble{%
2334     \BeforeFile{\jobname.#1}{%
2335         \pgfkeysvalueof{/itf/tocloft/#1/before}%
2336         \pgfkeysvalueof{/itf/tocloft/#1/columns/before@hook}%
2337     }%
2338     \AfterFile{\jobname.#1}{%
2339         \pgfkeysvalueof{/itf/tocloft/#1/columns/after@hook}%
2340         \pgfkeysvalueof{/itf/tocloft/#1/after}%
2341     }%
2342 }%
2343 \ifcsname #1setup\endcsname\else
2344     \pgfqkeys{/itf/tocloft/#1}{%
2345         title={#3},%
2346         pagenumbers/.true=\@cftpnumon{#2},%
2347         pagenumbers/.false=\@cftpnumoff{#2},%
2348         pagenumbers/on/.alias=pagenumbers/true,%
2349         pagenumbers/off/.alias=pagenumbers/false,%
2350         pagenumber/.alias=pagenumbers,%
2351     }%
2352     \expandafter\pretocmd\csname @cftmake#1title\expandafter\endcsname
2353     \expandafter{\expandafter\itf@tocloft\csname cft#1title\endcsname{#1}{listof#2}}
2354     {\@PackageInfoNoLine{interfaces-tocloft}
2355         {\expandafter\string\csname @cftmake#1title\endcsname\space
2356             successfully augmented}}
2357     {\@PackageWarningNoLine{interfaces-tocloft}
2358         {\expandafter\string\csname @cftmake#1title\endcsname\space
2359             \space could not be patched
2360             \MessageBreak Keys label and bookmark won't work for \string\listofsetup}}}%
2361 \fi
2362 }% \itf@cft@newlistof

```

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

```

2363 \itf@cft@newlistof{toc}{}{}
2364 \itf@cft@newlistof{lof}{}{}
2365 \itf@cft@newlistof{lot}{}{}

2366 %% Specific to toc only -----
2367 \pgfqkeys{/itf/tocloft/toc}{%
2368     title/.store as code in cs=contentsname,%
2369     contentsname/.alias=title,%
2370     ref/.initial=\contentsname,%
2371     ref/.default=\contentsname,%
2372     pagenumbers/.style={% boolean key
2373         part/pagenumbers={#1},chapter/pagenumbers={#1},section/pagenumbers={#1},%
2374         subsubsection/pagenumbers={#1},subsubsection/pagenumbers={#1},%
2375         paragraph/pagenumbers={#1},subparagraph/pagenumbers={#1}},%
2376     pagenumber/.alias=pagenumbers,%
2377 }%
2378 %% Specific to lof and lot -----
2379 \pgfqkeys{/itf/tocloft/lof}{%

```



```

2380 title/.store as code in cs=listfigurename,%
2381 listfigurename/.alias=title,%
2382 ref/.initial=\listfigurename,%
2383 ref/.default=\listfigurename,%
2384}%
2385\pgfqkeys{/itf/tocloft/lot}{%
2386 title/.store as code in cs=listtablename,%
2387 listtablename/.alias=title,%
2388 ref/.initial=\listtablename,%
2389 ref/.default=\listtablename,%
2390}%
2391\if@cftsubfigopt
2392\pgfqkeys{/itf/tocloft}{%
2393 lof/pagenumbers/.style={figure/pagenumbers={#1},subfigure/pagenumbers={#1}},%
2394 lof/pagenumbers/.alias=lof/pagenumbers,%
2395 lot/pagenumbers/.style={figure/pagenumbers={#1},subfigure/pagenumbers={#1}},%
2396 lot/pagenumbers/.alias=lot/pagenumbers,%
2397}%
2398\else
2399\pgfqkeys{/itf/tocloft}{%
2400 lof/pagenumbers/.style={figure/pagenumbers={#1}},%
2401 lof/pagenumbers/.alias=lof/pagenumbers,%
2402 lot/pagenumbers/.style={figure/pagenumbers={#1}},%
2403 lot/pagenumbers/.alias=lot/pagenumbers,%
2404}%
2405\fi

```

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

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

```

2406\def\itf@cft@name#1.#2.#3\@nil{cft#1\itf@cft@secname{#2}#3}
2407\def\itf@cft@secname#1{%
2408 \expandafter\itf@cft@sec@name\csname#1\endcsname{#1}%
2409}% \itf@cft@secname
2410\def\itf@cft@sec@name#1#2{%
2411 \ifx#1\relax #2\else
2412 \ifx#1\section sec\else
2413 \ifx#1\subsection subsec\else
2414 \ifx#1\subsubsection subsubsec\else
2415 \ifx#1\paragraph para\else
2416 \ifx#1\subparagraph subpara\else
2417 \ifx#1\figure fig\else
2418 \ifx#1\subsubfigure subfig\else
2419 \ifx#1\table tab\else
2420 \ifx#1\subtable subtab\else
2421 \ifx#1\chapter chap\else
2422 #2\fi
2423 \fi\fi\fi\fi\fi\fi\fi\fi\fi\fi
2424}% \itf@cft@section@name

2425%% tocloft setup for tables sections :
2426\pgfkeys{%
2427/handlers/.cft@def/.style={%
2428 \pgfkeyscurrentpath/.store in cs=\itf@cft@name #1\@nil},%
2429/handlers/.cft@code/.style={%
2430 \pgfkeyscurrentpath/.store as code in cs=\itf@cft@name #1\@nil},%
2431/handlers/.cft@length/.style={%
2432 \pgfkeyscurrentpath/.store in skip cs=\itf@cft@name #1\@nil},%
2433 }

```

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

```

2434\def\itf@cft@newsection{\itf@cft@new@section{/itf/tocloft}}
2435\def\itf@cft@new@section#1#2#3{% #2 = toc | lof | lot, #3=part / chap / sec / subsec etc.
2436 \pgfqkeys{#1/#2/#3}{%

```

```

2437 skip/.cft@length=before.#3.skip,%
2438 before/.alias*=skip,%
2439 top/.alias*=skip,%
2440 indent/.cft@length=.#3.indent,%
2441 font/.cft@code=.#3.font,%
2442 font/.append code=\pgfkeysalso{/itf/tocloft/#2/#3/pagenumbers/font={##1}},%
2443 format/.alias*=font,%
2444 color/.store as color,%
2445 color/.append code=\pgfkeysalso{/itf/tocloft/#2/#3/font+={%
2446 \color{\pgfkeysvalueof{/itf/tocloft/#2/#3/color}}%
2447 \ifdefined\hypersetup \hypersetup{%
2448 linkcolor=\pgfkeysvalueof{/itf/tocloft/#2/#3/color}}%
2449 \fi}},%
2450 font/color/.alias=color,%
2451 format/color/.alias=color,%
2452 number/width/.cft@length=.#3.numwidth,%
2453 numwidth/.alias*=number/width,%
2454 presnum/.cft@code=.#3.presnum,%
2455 number/before/.alias*=presnum,%
2456 aftersnum/.cft@code=.#3.aftersnum,%
2457 number/after/.alias*=aftersnum,%
2458 aftersnumb/.cft@code=.#3.aftersnumb,%
2459 title/before/.alias*=aftersnumb,%
2460 leader/.cft@def=.#3.leader,%
2461 leader/.default=\cftdotfill{\csname\itf@cft@name.#3.dotsep\@nil\endcsname},%
2462 leaders/.alias=leader,%
2463 dotsep/.code={\ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
2464 \csdef{\itf@cft@name.#3.dotsep\@nil}{\cftdotsep}%
2465 \else
2466 \itf@units@mu\itf@mus\{##1}%
2467 \csdef{\itf@cft@name.#3.dotsep\@nil}{\itf@strip@mu\itf@mus}%
2468 \fi}},%
2469 dotsep/.blank=\cftnodots,%
2470 nodots/.code=\csdef{\itf@cft@name.#3.dotsep\@nil}{\cftnodots},%
2471 nodots/.value forbidden,%
2472 pagefont/.cft@code=.#3.pagefont,%
2473 page/font/.alias*=pagefont,%
2474 pagenumbers/font/.alias*=pagefont,%
2475 pagenumbers/font/.alias*=pagefont,%
2476 page/color/.store as color,%
2477 page/color/.append code=\pgfkeysalso{/itf/tocloft/#2/#3/pagefont+={%
2478 \color{\pgfkeysvalueof{/itf/tocloft/#2/#3/page/color}}%
2479 \ifdefined\hypersetup \hypersetup{%
2480 linkcolor=\pgfkeysvalueof{/itf/tocloft/#2/#3/page/color}}%
2481 \fi}},%
2482 pagenumbers/color/.alias=page/color,%
2483 pagenumbers/color/.alias=page/color,%
2484 page/font/color/.alias=page/color,%
2485 pagenumbers/font/color/.alias=page/color,%
2486 pagenumbers/font/color/.alias=page/color,%
2487 afterpnum/.cft@code=.#3.afterpnum,%
2488 page/after/.alias*=afterpnum,%
2489 pagenumbers/after/.alias*=afterpnum,%
2490 pagenumbers/.on=\@cftpnumon{\itf@cft@secname{##3}},%
2491 pagenumbers/.off=\@cftpnumoff{\itf@cft@secname{##3}},%
2492 pagenumbers/.alias=pagenumbers,%
2493 }% \pgfkeys
2494 }% \itf@cft@new@section

2495 \@for\itf@tp:=part,chap,chapter,sec,section,subsec,subsection,%
2496 subsubsec,subsubsection,para,paragraph,subpara,subparagraph%
2497 \do{\edef\itf@tp{\noexpand\itf@cft@newsection{toc}{\itf@tp}}\itf@tp}%
2498 \if@cftsubfigopt
2499 \@for\itf@tp:=fig,figure,subfig,subfigure%
2500 \do{\edef\itf@tp{\noexpand\itf@cft@newsection{lof}{\itf@tp}}\itf@tp}%

```

```

2501 \for\itf@tp:=tab,table,subtab,subtable%
2502 \do{\edef\itf@tp{\noexpand\itf@cft@newsection{lot}{\itf@tp}}\itf@tp}%
2503 \else
2504 \for\itf@tp:=fig,figure%
2505 \do{\edef\itf@tp{\noexpand\itf@cft@newsection{lof}{\itf@tp}}\itf@tp}%
2506 \for\itf@tp:=tab,table%
2507 \do{\edef\itf@tp{\noexpand\itf@cft@newsection{lot}{\itf@tp}}\itf@tp}%
2508 \fi

\@cftmaketoctitle (patch)
\@cftmakelofttitle (patch)
\@cftmakelotttitle (patch)
\newlistof (patch)
2509 \itf@patch\pretocmd\@cftmaketoctitle
2510 {\itf@tocloft\contentsname{toc}{tableofcontents}}
2511 {\@PackageInfoNoLine{interfaces-tocloft}
2512 {\string\@cftmaketoctitle\space successfully augmented}}
2513 {\@PackageWarningNoLine{interfaces-tocloft}
2514 {\string\@cftmaketoctitle\space could not be patched
2515 \MessageBreak label and bookmark keys for \string\tocsetup\space won't work}}%
2516 \itf@patch\pretocmd\@cftmakelofttitle
2517 {\itf@tocloft\listfigurename{lof}{listoffigures}}
2518 {\@PackageInfoNoLine{interfaces-tocloft}
2519 {\string\@cftmakelofttitle\space successfully augmented}}
2520 {\@PackageWarningNoLine{interfaces-tocloft}
2521 {\string\@cftmakelofttitle\space could not be patched
2522 \MessageBreak label and bookmark keys for \string\lofsetup\space won't work}}%
2523 \itf@patch\pretocmd\@cftmakelotttitle
2524 {\itf@tocloft\listtablename{lot}{listoftables}}
2525 {\@PackageInfoNoLine{interfaces-tocloft}
2526 {\string\@cftmakelotttitle\space successfully augmented}}
2527 {\@PackageWarningNoLine{interfaces-tocloft}
2528 {\string\@cftmakelotttitle\space could not be patched
2529 \MessageBreak label and bookmark keys for \string\lotsetup\space won't work}}%
2530 \expandafter\itf@patch\expandafter\patchcmd\csname\string\newlistof\endcsname
2531 {#4}{\csname cft#3title\endcsname}
2532 {\@PackageInfoNoLine{interfaces-tocloft}
2533 {\string\newlistof\space successfully patched}}
2534 {\@PackageWarningNoLine{interfaces-tocloft}
2535 {\string\newlistof\space could not be patched
2536 \MessageBreak \string\listofsetup\space will not work}}%
2537 \expandafter\itf@patch\expandafter\apptocmd\csname\string\newlistof\endcsname
2538 {\itf@cft@newlistof{#3}{#2}{#4}}
2539 {\@PackageInfoNoLine{interfaces-tocloft}
2540 {\string\newlistof\space successfully augmented}}
2541 {\@PackageWarningNoLine{interfaces-tocloft}
2542 {\string\newlistof\space could not be patched
2543 \MessageBreak \string\listofsetup\space will not work}}%
2544 \expandafter\itf@patch\expandafter\apptocmd\csname\string\newlistentry\endcsname
2545 {\itf@cft@newsection{#3}{#2}}
2546 {\@PackageInfoNoLine{interfaces-tocloft}
2547 {\string\newlistentry\space successfully augmented}}
2548 {\@PackageWarningNoLine{interfaces-tocloft}
2549 {\string\newlistentry\space could not be patched
2550 \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.

2551 \def\itf@tocloft#1#2#3{%
2552 \expandafter\def\expandafter#1\expandafter{%
2553 \expandafter\itf@cft@label
2554 \expandafter#1\expandafter{#1}{#2}{#3}}%
2555 }% \itf@tocloft
2556 \long\def\itf@cft@label#1#2#3#4{%
2557 \def#1{#2}% restore original
2558 \begingroup
2559 \pgfkeysifdefined{/itf/tocloft/#3/bookmark}

```

```

2560      {%
2561      \raisedhyperdef{interfaces}{#4}{#2}%
2562      \pgfkeysgetvalue{/itf/tocloft/#3/bookmark/text}\itf@tp
2563      \ifx \itf@tp@empty \else
2564      \pgfkeysgetvalue{/itf/tocloft/#3/bookmark}\@tempa
2565      \expandafter\bookmark\expandafter[%
2566      \expandafter{\@tempa,
2567      dest=interfaces.#4,%
2568      level=\pgfkeysvalueof{/itf/tocloft/#3/bookmark/level}%
2569      }]{\pgfkeysvalueof{/itf/tocloft/#3/bookmark/text}}%
2570      \global\BKM@startatroottrue
2571      \fi}
2572      {#2}%
2573      \pgfkeysgetvalue{/itf/tocloft/#3/label}\itf@tp
2574      \ifx \itf@tp@empty \else
2575      \def\@currentHref{interfaces.#4}%
2576      \pgfkeysgetvalue{/itf/tocloft/#3/ref}\@currentlabel
2577      \def\@currentlabelname{#2}%
2578      \label{\pgfkeysvalueof{/itf/tocloft/#3/label}}%
2579      \fi
2580      \endgroup
2581      \gdef\itf@tp{\def#1{#2}\global\let\itf@tp \relax}% restore original
2582      \aftergroup\itf@tp % simple group introduced by tocloft to print \contentsname
2583      }% \itf@cft@label

2584 \</tocloft>

```

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

```

2585 <*makecell>
2586 \ProvidesPackage{interfaces-makecell}
2587 [2011/02/12 v3.0 repeatcell to fill in tabulars (FC)]
2588 \RequirePackage{interfaces-base}
2589 \itf@Check@Package{makecell}
2590 \edef\itf@AtEnd{\catcode126 \the\catcode126}% 126 = ~
2591 \AtEndOfPackage{\itf@AtEnd}
2592 \catcode126 \active % 126 = ~

```

### 21.12.1 countvalues

`\countvalues`

```

2593 \def\countvalues#1{\number\numexpr
2594   \expandafter\itf@countvalues\expandafter0#1,\countvalues\@nnil
2595 }% \countvalues
2596 \def\itf@countvalues#1#2,#3{%
2597   \ifx\countvalues#3%
2598     +#1\expandafter\remove@to@nnil
2599   \else
2600     +1\expandafter\itf@countvalues
2601   \fi1#3%
2602 }% \itf@countvalues

```

`\itf@getvalue`

```

2603 \def\itf@getvalue #1{\romannumeral -'\q
2604   \expandafter\itf@getvalue \expandafter0#1,\itf@getvalue}
2605 \def\itf@getvalue#1#2\itf@getvalue #3{\itf@getvalue@{#1}{#3-1}#2\itf@getvalue\@nnil}
2606 \def\itf@getvalue@{#1}{#2}{#3}{#4}%
2607   \ifnum \numexpr#1=\numexpr#2\relax
2608     #3\expandafter\remove@to@nnil
2609   \else\ifx\itf@getvalue#4@empty
2610     \expandafter\expandafter
2611     \expandafter\remove@to@nnil
2612   \else \expandafter\expandafter
2613     \expandafter\itf@getvalue@

```

```

2614 \fi\fi{#1+1}{#2}#4%
2615}% \itf@getv@lu@

```

### 21.12.2 `\repeatcell`

`\repeatcell`

```

2616 \newif\ifitf@celltranspose
2617 \newrobustcmd*\repeatcell{\begingroup \iffalse{\fi \ifnum0='}\fi \itf@repeatcell}
2618 \newrobustcmd*\itf@repeatcell[3][]{%
2619   \ifblank{#1}% alignment option ?
2620   {\let\itf@makecell\@firstofone}
2621   {\def\itf@makecell##1{\noexpand\makecell[#{#1}]{##1}}}%
2622   \countdef\itf@col=100% local
2623   \countdef\itf@row=101% local
2624   \countdef\itf@cnt=102% local
2625   \toksdef\itf@cell=1% local
2626   \itf@pgfkeys
2627   \pgfqkeys{/itf/makecell/repeatcell}{@reset={#2},#3}%
2628   \toks@{\ifnum0='}\fi \endgroup}% local
2629   \ifnum\itf@row>\z@ % number
2630     \edef\itf@rowloop{\noexpand\@whilenum\itf@row<\the\itf@row}%
2631     \def\itf@cell@init{\def\r{\row}\let\R@empty}%
2632   \else % list
2633     \def\itf@rowloop{\@for\r:=\itf@rows}%
2634     \expandafter\def\expandafter\itf@cell@init\expandafter{%
2635       \expandafter\def\expandafter\R\expandafter{%
2636         \expandafter\itf@getvalue\expandafter{\expandafter\@empty\itf@rows}}}%
2637   \fi
2638   \ifnum\itf@col>\z@ % number
2639     \edef\itf@colloop{\noexpand\@whilenum\itf@col<\the\itf@col}%
2640     \expandafter\def\expandafter\itf@cell@init\expandafter{%
2641       \itf@cell@init\def\c{\column}\let\C@empty}%
2642   \else % list
2643     \def\itf@colloop{\@for\c:=\itf@cols}%
2644     \expandafter\expandafter\expandafter\def
2645       \expandafter\expandafter\expandafter\itf@cell@init
2646       \expandafter\expandafter\expandafter{%
2647         \expandafter\itf@cell@init
2648         \expandafter\def\expandafter\C\expandafter{%
2649           \expandafter\itf@getvalue\expandafter{\expandafter\@empty\itf@cols}}}%
2650   \fi
2651   \itf@cell@init % in case they are used in formulas
2652   \ifitf@celltranspose
2653     \itf@col\z@
2654     \itf@colloop\do{%
2655       \ifnum\itf@col>\z@
2656         \pgfkeysifdefined{/itf/makecell/repeatcell/cr/row\the\itf@col}%
2657         {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr/row\the\itf@col}\itf@thecr}%
2658         {\pgfkeysgetvalue{/itf/makecell/repeatcell/cr}\itf@thecr}%
2659         \toks@\expandafter{\the\expandafter\toks@ \itf@thecr}%
2660       \fi
2661       \advance\itf@col\@ne
2662       \itf@row\z@
2663       \itf@rowloop\do{%
2664         \advance\itf@row\@ne
2665         \ifnum\itf@row>\@ne
2666           \toks@\expandafter{\the\toks@&}%
2667         \fi
2668         \toks@\expandafter{\the\expandafter\toks@ \itf@cell@init}%
2669         \itf@cell@insert}% rows loop
2670     }% cols loop
2671   \else
2672     \itf@row\z@

```

```

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

```

`\itf@message`

```
2695 \let\itf@message \@gobble
```

Now the keys for `\repeatcell`:

```

2696 \def\itf@cell@rowcolkey{%
2697   \removefromstart\pgfkeyscurrentname{row}%
2698   \ifin@\else
2699     \removefromstart\pgfkeyscurrentname{col}%
2700   \fi
2701   \ifin@
2702     \itf@number\itf@cnt\pgfkeyscurrentname\relax\@nnil
2703     {\pgfkeyslet\pgfkeyscurrentkey\pgfkeyscurrentvalue}
2704     \in@false
2705   \fi
2706   \ifin@\else
2707     \pgfkeysvalueof{/errors/unknown key/.@cmd}\pgfkeyscurrentkey
2708                                     \pgfkeyscurrentvalue
2709                                     \pgfeov
2710   \fi
2711}% \itf@cell@rowcolkey
2712 \pgfkeys{/itf/makecell/repeatcell}{%
2713   font/.store in=\itf@cellfont,%
2714   font/.unknown/.code=\itf@cell@rowcolkey,%
2715   text/.store in=\itf@celltext,%
2716   text/.default=\ifdefined\C\C\column\fi,%
2717   text/.unknown/.code=\itf@cell@rowcolkey,%
2718   cr/.initial=\\,%
2719   cr/.default=\crr,cr/.blank=\\,%
2720   end/.alias=cr,%
2721   cr/.unknown/.code=\itf@cell@rowcolkey,%
2722   rows/.code=\itf@number\itf@row#1\relax\@nnil
2723     {\ifnum\itf@row<\z@\itf@row\@ne\fi}
2724     {\itf@row\z@
2725       \def\itf@rows{#1}\itf@expandonceifcs\itf@rows},%
2726   rows/.default=1,rows/.blank=1,%
2727   @cols/.is private=interfaces-makecell,%
2728   column/.is private=interfaces-makecell,%
2729   row/.is private=interfaces-makecell,%
2730   transpose/.is if=\itf@celltranspose,%
2731   .unknown/.code=
2732     \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text \itf@cell@formulaerror{}\z@ \fi

```



```

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

```

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

```

2755 \def\itf@cell@getformula#1{%
2756 \itf@cell@getformula #1$$$ \itf@cell@getformula $\relax\@nnil
2757 \expandafter\ifx\expandafter\toks@\the\toks@
2758 \itf@cell@formulaerror{#1}\thr@@
2759 \fi
2760 }% \itf@cell@getformula
2761 \def\itf@cell@getformula #1$#2$#3$#4$#5$#6{%
2762 \toks@{\toks@}%
2763 \ifx\itf@cell@getformula #4%
2764 \toks@{\itf@cell@numcalc{#1}}%
2765 \else\ifx $#4%
2766 \ifx\itf@cell@getformula #6%
2767 \ifdefined\pgfmathparse\else\itf@cell@formulaerror{#2}4\fi
2768 \toks@{\itf@cell@pgfcalc{#2}}%
2769 \else\ifx $#6%
2770 \ifdefined\FPeval\else\itf@cell@formulaerror{#3}5\fi
2771 \toks@{\itf@cell@FPcalc{#3}}%
2772 \fi\fi
2773 \fi\fi\remove@to\@nnil
2774 }% \itf@cell@getformula
2775 \def\itf@cell@formulaerror#1#2{%
2776 \def\itf@tp{#1}\@onelevel@sanitize\itf@tp
2777 \ifcase#2% 0
2778 \PackageError{interfaces-makecell}
2779 {Missing formula for key \pgfkeyscurrentname!}\@ehd
2780 \or %1
2781 \PackageError{interfaces-makecell}
2782 {Computed key \pgfkeyscurrentname\space was left blank!}\@ehd
2783 \or %2
2784 \PackageError{interfaces-makecell}
2785 {Duplicate definition for computed key \pgfkeyscurrentname
2786 \MessageBreak\string\repeatcell\space will redefine the key}\@eha
2787 \or %3
2788 \PackageError{interfaces-makecell}
2789 {Incorrect formula in \string\repeatcell
2790 \MessageBreak Check: \itf@tp
2791 \MessageBreak Take care of commas and equal signs...}\@ehd
2792 \or %4
2793 \PackageError{interfaces-makecell}

```

```
2794      {Formula: \itf@tp
2795      \MessageBreak requires \string\pgfmathparse:\space\string\usetikz{pgfmath}}\@ehd
2796      \or %5
2797      \PackageError{interfaces-makecell}
2798      {Formula: \itf@tp
2799      \MessageBreak requires \string\FPeval:\space\string\usepackage{fp}}\@ehd
2800      \else
2801      \PackageError{interfaces-makecell}
2802      {Impossible value!}\@ehd
2803      \fi
2804 }% \itf@cell@formulaerror
```

```

\itf@cell@calc
\itf@cell@numcalc 2805 \protected\def\itf@cell@calc#1#2{%
\itf@cell@pgfcalc 2806   \edef#1{\def\noexpand#1{#2}}%
\itf@cell@FPcalc 2807   \toks@ \expandafter{\the\expandafter\toks@ #1}%
2808   #1%
2809 }% \itf@cell@calc
2810 \protected\def\itf@cell@numcalc#1#2{%
2811   \itf@cell@calc#2{\number\numexpr#1}%
2812 }% \itf@cell@numcalc
2813 \protected\def\itf@cell@pgfcalc#1#2{%
2814   \pgfmathparse{#1}%
2815   \itf@cell@calc#2\pgfmathresult
2816 }% \itf@cell@pgfcalc
2817 \protected\def\itf@cell@FPcalc#1#2{%
2818   \begingroup
2819   \hfuzz\maxdimen \vfuzz\hfuzz \hbadness\@M \vbadness\hbadness
2820   \everypar{}\tracinglostchars\z@
2821   \setbox\z@\vbox{%\FPeval introduces some weird code, hence the calculation in a \vbox
2822     \FPeval\FPresult{#1}%
2823     \expandafter}\expandafter\endgroup
2824     \expandafter\itf@cell@calc\expandafter#2\expandafter{\FPresult}%
2825 }% \itf@cell@FPcalc

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

2826 \def\itf@cell@getifdefined#1#2{%
2827   \pgfkeysifdefined{/itf/makecell/repeatcell/#1}
2828     {\pgfkeysgetvalue{/itf/makecell/repeatcell/#1}{#2}
2829     {\let#2\@empty}%
2830 }%
2831 \def\itf@cell@insert{%
2832   \pgfkeysvalueof{/itf/makecell/repeatcell/@calc}%
2833   \ifx\R\@empty\else
2834     \toks@ \expandafter{\the\expandafter\toks@
2835       \expandafter\def\expandafter\r\expandafter{\r}}%
2836   \fi
2837   \ifx\C\@empty\else
2838     \toks@ \expandafter{\the\expandafter\toks@
2839       \expandafter\def\expandafter\c\expandafter{\c}}%
2840   \fi
2841   \itf@cell@getifdefined{font/row\the\itf@row}\itf@cellfontrow
2842   \itf@cell@getifdefined{font/col\the\itf@col}\itf@cellfontcol
2843   \itf@cell@getifdefined{text/row\the\itf@row}\itf@cellrow
2844   \itf@cell@getifdefined{text/col\the\itf@col}\itf@cellcol
2845   \toks@ \expandafter{\the\expandafter\toks@ \itf@cellfont}%
2846   \ifx\itf@cellrow\@empty
2847     \ifx\itf@cellcol\@empty
2848       \itf@cell\expandafter\expandafter\expandafter{%
2849         \expandafter\itf@cellfontcol \itf@cellfontrow}%
2850       \let\itf@tp\itf@celltext
2851     \else
2852       \itf@cell\expandafter{\itf@cellfontcol}%
2853       \let\itf@tp\itf@cellcol
2854     \fi
2855   \else
2856     \ifx\itf@cellcol\@empty
2857       \itf@cell\expandafter{\itf@cellfontrow}%
2858       \let\itf@tp\itf@cellrow
2859     \else
2860       \itf@cell{}%
2861       \ifitf@celltranspose
2862         \edef\itf@tp{\noexpand\itf@diaghead(-2,1)%
2863           {\expandonce\itf@cellfontrow\expandonce\itf@cellrow}
2864           {\expandonce\itf@cellfontcol\expandonce\itf@cellcol}}%

```

```

2865         \else
2866         \edef\itf@tp{\noexpand\itf@diaghead(-2,1)%
2867             {\expandonce\itf@cellfontcol\expandonce\itf@cellcol}
2868             {\expandonce\itf@cellfontrow\expandonce\itf@cellrow}}%
2869         \fi
2870     \fi
2871 \fi
2872 \itf@cell\expandafter{\the\expandafter\itf@cell \itf@tp}%
2873 \edef\itf@tp{\itf@makecell{\the\itf@cell}}%
2874 \toks@\expandafter{\the\expandafter\toks@ \itf@tp}%
2875 }% \itf@cell@insert

```

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

```

2876 \def\itf@diaghead(#1)#2#3{%
2877     \begingroup
2878     \edef\itf@tp{\endgroup
2879         \noexpand\diaghead({#1}){\unexpanded{#2 #3}}%
2880         {\unexpanded{#2}}
2881         {\unexpanded{#3}}}%
2882     }\itf@tp
2883 }% \itf@diaghead

```

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

`\CT@cellc`

```

2884 \AfterPackage*{colortbl}{%
2885 \def\CT@cellc#1[#2]#3{% #1 is either \@firstofone or \@gobble, [#2]#3 = color spec
2886     \xdef\CT@cell@color{\noexpand\CT@color#1[#{#2}]{#3}%
2887     \global\let\noexpand\CT@cell@color\relax}%
2888 }}
2889 \end{makecell}

```

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

```

2890 \newrobustcmd*{enumitem}
2891 \ProvidesPackage{interfaces-enumitem}
2892 [2011/02/12 v3.0 more control on lists (FC)]
2893 \RequirePackage{interfaces-base}
2894 \itf@Check@Package{enumitem}

```

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

```

2895 \providerobustcmd*\interitem{%
2896     \item[]\hskip-\leftmargin
2897 }% \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.

```

2898 \define@key{enumitem}{first}[\@ne]{\setkeys{enumitem}{start={#1}}}

```

`\setlist` (extension, star form)

```

2899 \renewrobustcmd*\setlist{\begingroup \@ifstar
2900     {\let\do\csgappto \itf@setlist}
2901     {\let\do\csgdef \itf@setlist}%
2902 }% \setlist
2903 \newrobustcmd*\itf@setlist[2][0]{%
2904     \let\enit@a\@empty
2905     \let\enit@b\@empty
2906     \@for\x:=#1\do{%
2907         \ifx\x\@empty\else
2908             \itf@number\count@\x\relax\@nnil
2909             {\edef\enit@b{\enit@b,\the\count@}}
2910             {\edef\enit@a{\enit@a,\x}}%

```

```

2911     \fi}%
2912     \ifx\enit@a\@empty\def\enit@a{list}\fi
2913     \ifx\enit@b\@empty\def\enit@b{0}\fi
2914     \@for\@a:=\enit@a\do{%
2915         \ifx\@a\@empty\else
2916             \@for\@b:=\enit@b\do{%
2917                 \ifx\@b\@empty\else
2918                     \ifcsundef{end\@a}
2919                         {\expandafter\itf@setlist@error\expandafter{\@a}}
2920                         {\do{enit@@\@a\romannumeral\@b}{, #2}}}%
2921                 \fi}%
2922             \fi}
2923     \endgroup
2924 }% \itf@setlist
2925 \def\itf@setlist@error#1{%
2926     \PackageError{interfaces-enumitem}
2927         {Environment ‘#1’ is undefined
2928         \MessageBreak Use \string\newlist\space before \string\setlist
2929         \MessageBreak Your command will be ignored}\@eha
2930 }% \itf@setlist@error
2931 </enumitem>

```

## 21.14 † Interface ⇄ `truncate`

```

2932 <*truncate>
2933 \ProvidesPackage{interfaces-truncate}

```

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

```

2934 \newrobustcmd\truncetext[3][\TruncateMarker]{% do nothing if width of #3 is less than #2
2935     \begingroup
2936         \hbadness\maxdimen\hfuzz\vsize
2937         \setbox\z@=\hbox to\dimexpr#2\relax\bgroup\color@begingroup
2938                                     \ignorespaces#3\unskip
2939                                     \color@endgroup\egroup
2940         \ifnum\badness>\@M \truncate[{\#1}]{\#2}{\#3}%
2941         %% \def\next{\truncate[{\#1}]{\#2}{\#3}}%
2942         \else #3%\def\next{\#3}%
2943         \fi
2944     \endgroup
2945 }% \truncetext

```

`\htruncadjust`

```

2946 \newrobustcmd\htruncadjust[1]{\@testopt
2947     {\itf@htruncadjust{\#1}}}%
2948 }% \htruncadjust
2949 \long\def\itf@htruncadjust#1[#2]#3{%#1=total width, #2=[x_1..x_n], #3=text_1..text_n
2950     \begingroup
2951         \let\itf@trunc@width\@empty
2952         \let\itf@istruncated\@gobble % to remove the first comma
2953         \let\the@dimen\relax
2954         \count@ \z@ \dimen@ \z@
2955         \ifblank{#2}% no optional [x_1,...,x_n] parameters
2956             {%
2957                 \@for\x:=#3\do{%
2958                     \advance \count@ \@ne
2959                     \setbox\z@\hbox\bgroup\color@begingroup
2960                                     \ignorespaces\x\unskip
2961                                     \color@endgroup\egroup
2962                     \dimen\count@ = \wd\z@
2963                     \toks\count@\expandafter{\the\dimen\count@}%
2964                     \advance\dimen@ \dimen\count@}%
2965             }
2966             {%
2967                 \@for\x:=#2\do{%

```

```

2968         \advance \count@ \@ne
2969         \toks\count@\expandafter{\x\p}%
2970         \advance\dimen@ \x\p@
2971         \dimen\count@ -\@ne\p}%
2972     }%
2973     \advance\count@\@ne \dimendef\itf@freespace=\count@
2974     \advance\count@\@ne \dimendef\itf@tempdim=\count@
2975     \advance\count@\@ne \dimendef\itf@sum=\count@
2976     \count@\z@
2977     \itf@freespace\z@ % free space left when  $w_i < x_i/\text{sum}(x_i) * \text{total}$ 
2978     \@for\x:=#3\do{%
2979         \advance \count@ \@ne
2980         \ifdim\dimen@=\z@ \else
2981             \ifdim \dimen\count@<\z@ % not measured before
2982                 \setbox\z@\hbox\bgroup\color@begingroup
2983                     \ignorespaces\x\unskip
2984                     \color@endgroup\egroup
2985                 \dimen\count@ = \wd\z@
2986             \fi
2987             \itf@tempdim = \itf@scaledimen{#1}*\the\toks\count@/\dimen@relax
2988             \ifdim \dimen\count@ > \itf@tempdim
2989                 \dimen\count@ = \itf@tempdim
2990                 \edef\itf@istruncated{\itf@istruncated,\the\count@}%
2991                 \advance\itf@sum by\the\toks\count@
2992             \else
2993                 \advance\itf@freespace \itf@tempdim
2994                 \advance\itf@freespace -\dimen\count@
2995             \fi
2996         \fi
2997         \edef\itf@trunc@width{\itf@trunc@width\the\count@\the@dimen\the\count@}}%
2998     }%
2999 % Free space=\the\itf@freespace\par
3000 \ifdim\itf@freespace > \z@ % reinsert free space proportionally
3001     \ifx\itf@istruncated@gobble\else
3002         \@for\x:=\itf@istruncated\do{%
3003             \advance\dimen\x by\itf@scaledimen\itf@freespace*\the\toks\x/\itf@sumrelax
3004         }%
3005     \fi\fi
3006     \def\the@dimen{\the\dimen}%
3007     \edef\itf@trunc@width{\itf@trunc@width}%
3008     \expandafter\endgroup
3009     \expandafter\def
3010         \expandafter\itf@trunc@width
3011         \expandafter{\itf@trunc@width}%
3012 %% total=\the\dimexpr#1\relax
3013 }% \itf@htruncadjust
3014 \def\itf@scalefactor#1#2{\strip@pt\dimexpr#1*65536/#2\relax}
3015 \def\itf@scaledimen#1*#2/#3\relax{%
3016     \dimexpr\itf@scalefactor{#2}{#3}\dimexpr#1\relax\relax
3017 }% \itf@scaledimen

```

\htruncwidth

```

3018 \newcommand*\htruncwidth[1]{% purely expandable
3019     \expandafter\itf@htruncwidth\itf@trunc@width\relax\relax@nnil{#1}%
3020 }% \htruncwidth
3021 \def\itf@htruncwidth#1#2#3\@nnil#4{%
3022     \ifx\relax#1\itf@trunc@nosuchwidth{#4}%
3023     \else\ifnum#1=#4
3024         #2%
3025     \else
3026         \itf@htruncwidth#3\@nnil{#4}%
3027     \fi\fi
3028 }% \itf@htruncwidth
3029 \def\itf@trunc@nosuchwidth#1{%

```



```

3030 \PackageError{interfaces-truncate}
3031 {You requested the width for text nr#1
3032 \MessageBreak but there is no such text
3033 \MessageBreak Therefore no such width!}\@ehd
3034 }% \itf@trunc@nosuchwidth
3035 </truncate>

```

## 21.15 Interface `appendix` and the appendices environment

```

3036 <*appendix>
3037 \ProvidesPackage{interfaces-appendix}
3038 [2011/02/12 v3.0 easy control of appendices environment (FC)]
3039 \RequirePackage{interfaces-base}
3040 \itf@Check@Package{appendix}

```

\appendices

```

3041 \let\itf@appendices@pp\appendices
3042 \let\itf@endappendices@pp\endappendices
3043 \let\itf@appendices@pp\appendices
3044 \let\itf@endappendices@pp\endappendices
3045 \renewenvironment{appendices}[1][ ]{%
3046 \pgfqkeys{/itf/appendix/appendices}{#1}%
3047 \itf@appendices@pp
3048 }
3049 {\itf@endappendices@pp}%

3050 \pgfqkeys{/itf/appendix/appendices}{%
3051 title/.store as code in cs=appendixpagename,%
3052 title/.append code=\ifx\appendixpagename\@empty \@dopage@ppfalse
3053 \else \@dopage@pptrue\fi,%
3054 title/.value required,%
3055 intoc/.is if=@dotoc@pp,%
3056 intoc/title/.store as code in cs=appendixtocname,%
3057 intoc/title/.append code=\ifx\appendixtocname\@empty \@dotoc@ppfalse
3058 \else \@dotoc@pptrue\fi,%
3059 intoc/title/.default=\pgfkeysvalueof{/itf/appendix/appendices/title},%
3060 section/.is enum={section,chapter},%
3061 section/.append code={\@chapter@ppfalse
3062 \ifnum\pgfkeysvalueof{/itf/appendix/appendices/section/.number}=\z@
3063 \else \ifundef\chapter
3064 {\PackageWarning{interfaces-appendix}
3065 {You asked chapter-style appendices but your
3066 \MessageBreak current class does not provide chapters!}}
3067 \@chapter@pptrue
3068 \fi},%
3069 chapter/.style={section=chapter},%
3070 chapter/.value forbidden,%
3071 }% keys for appendices environment

3072 </appendix>

```

## 21.16 Interface `embedfile` : \embedthisfile

```

3073 <*embedfile>
3074 \ProvidesPackage{interfaces-embedfile}
3075 [2011/02/12 v3.0 easy macros to embed files into pdf (FC)]
3076 \RequirePackage{interfaces-base}
3077 \itf@Check@Package{embedfile}
3078 \newrobustcmd*\embedthisfile{\@ifstar
3079 \embedthisfile@main
3080 \embedthisfile@all
3081 }% \embedthisfile
3082 \@onlypreamble\embedthisfile
3083 \def\embedthisfile@main{\embedfile{\jobname.tex}}

```

```

3084 \def\embedthisfile@all{%
3085   \embedthisfile@main
3086   \AfterPreamble{%
3087     \ltx@ifundefined{@listfiles}
3088       {\let\@listfiles \@empty}% to avoid: \global\let\@filelist\relax in \document
3089     }%
3090   }%
3091   \gpreto\@enddocumenthook{%
3092     \let\do \itf@EmbedOne
3093     \expandafter\docsvlist\expandafter{\@filelist}%
3094   }%
3095 }% \embedthisfile@all
3096 \def\itf@EmbedOne#1{\itf@Embed@ne#1.tex\@nil}
3097 \def\itf@Embed@ne#1.tex#2\@nil{%
3098   \ltx@ifundefined{cp@#1}
3099     {}
3100     {\ifblank{#2}
3101       {}
3102       {\embedfile{#1.tex}}}%
3103 }% \itf@Embed@ne
3104 \endembedfile

```

### 21.17 † Interface `environ`

```

3105 \*environ
3106 \ProvidesPackage{interfaces-environ}
3107   [2011/02/12 v3.0 ReNewEnviron = RenewEnviron (FC)]
3108 \RequirePackage{interfaces-base}
3109 \AfterPackage{environ}{
3110   \ifundef\ReNewEnviron
3111     {\let\ReNewEnviron\RenewEnviron}
3112     {}%
3113 }%
3114 \endenviron

```

### 21.18 † Interface `umrand`

```

3115 \*umrand
3116 \ProvidesPackage{interfaces-umrand}
3117   [2011/02/12 v3.0 patch for umrand.sty ifnotempty (FC)]
3118 \RequirePackage{interfaces-base}
3119 \BeforePackage{umrand}{%
3120   \let\itf@newif\newif
3121   \def\itf@tp{\ifnotempty}%
3122   \def\newif#1{\def\x{#1}\ifx\x\itf@tp \expandafter\@gobble
3123     \else\expandafter\ltx@newif\fi{#1}}%
3124 }
3125 \AfterPackage{umrand}{%
3126   \let\newif\itf@newif
3127   \let\itf@newif\@undefined
3128 }
3129 \endumrand

```

### 21.19 † Interface `scrfile`

```

3130 \*scrfile
3131 \ProvidesPackage{interfaces-scrfile}
3132   [2011/02/12 v3.0 scrfile hooks improved (FC)]
3133 \RequirePackage{interfaces-base}

```

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

```

\@clsextension
3134 \AfterEndPreamble{%
3135   \let\@pkgextension\ltx@pkgextension
3136   \let\@clsextension\ltx@clsextension
3137   \let\@ifpackageloaded\ltx@ifpackageloaded

```

```

3138 \let@ifclassloaded\ltx@ifclassloaded
3139 }

\scr@load@hook

3140 \renewrobustcmd*\scr@load@hook[2]{%
3141 \csuse{#2-@#1}%
3142 \ifcsname#2-@#1-\string\keep\endcsname\else\global\csundef{#2-@#1}\fi
3143 }% \scr@load@hook

\scr@set@load@hook (optimisation)

3144 \renewrobustcmd*\scr@set@load@hook[2]{\csgappto{#2-@#1}}

\BeforeFile Addition of star forms *: the hooks are not canceled after input (in case a file is input more than once...)
\AfterFile
3145 \renewrobustcmd*\BeforeFile{\@ifstar
3146 {\itf@s@LoadFile{before}}
3147 {\itf@LoadFile{before}}}%
3148 }% \BeforeFile
3149 \renewrobustcmd*\AfterFile{\@ifstar
3150 {\itf@s@LoadFile{after}}
3151 {\itf@LoadFile{after}}}%
3152 }% \AfterFile

3153 \def\itf@s@LoadFile#1#2{%
3154 \global\cslet{#2-@#1-\string\keep}\empty
3155 \scr@set@load@hook{#1}{#2}%
3156 }% \itf@s@LoadFile
3157 \def\itf@LoadFile#1#2{%
3158 \global\csundef{#2-@#1-\string\keep}%
3159 \scr@set@load@hook{#1}{#2}%
3160 }% \itf@LoadFile

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

3161 \renewcommand*\@input[1]{\IfFileExists{#1}
3162 {\scr@load@hook{before}{#1}%
3163 \@@input\@filef@und
3164 \scr@load@hook{after}{#1}}%
3165 {\typeout{No file #1.}}}%
3166 }% \@input

3167 </scrfile>

```

## 21.20 † Interface `pgfkeys` (↔ [pgfmanual](#))

```

3168 (*pgfkeys)
3169 \ProvidesPackage{interfaces-pgfkeys}
3170 [2011/02/12 v3.0 pgfkeys handlers definitions (FC)]
3171 \RequirePackage{interfaces-base}
3172 \ifdefined\pgfkeys@ifexecutehandler % pgf version 2.1
3173 \def\itf@pgfkeys{%
3174 \global\let\pgfkeys@unpack \itf@pgfkeys@unpack
3175 \global\let\pgfkeys@case@three \itf@pgfkeys@case@three
3176 \global\let\pgfkeys@case@three@handleall\itf@pgfkeys@case@three@handleall
3177 }% \itf@pgfkeys
3178 \else
3179 \def\itf@pgfkeys{%
3180 \global\let\pgfkeys@unpack \itf@pgfkeys@unpack
3181 \global\let\pgfkeys@case@three \itf@pgfkeys@case@three
3182 \global\let\pgfkeys@addvalue \itf@pgfkeys@addvalue
3183 \global\let\pgfkeys@exp@call \itf@pgfkeys@exp@call
3184 }% \itf@pgfkeys
3185 \fi
3186 \AtBeginDocument{\itf@pgfkeys \let\itf@pgfkeys \relax}

```

### Some new `pgfkeys` macros

`\pgfkeysmeaning`

```

3187 \providecommand*\pgfkeysmeaning[1]{\pgfkeysifdefined{#1}
3188   {\expandafter\meaning\csname pgfk@#1\endcsname}
3189   {\meaning\@undefined}%
3190 }% \pgfkeysmeaning

```

`\pgfkeysvalueof@unexpanded`

```

3191 \def\pgfkeysvalueof@unexpanded#1{%
3192   \unexpanded\expandafter\expandafter\expandafter{%
3193     \csname pgfk@#1\endcsname}%
3194 }% \pgfkeysvalueof@unexpanded

```

**Some `pgfkeys` macros redefinition/corrections**

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

```

3195 \ifdefined\pgfkeys@ifexecutehandler \else % pgf v2.1: bug fixed
3196 \def\itf@pgfkeysaddvalue#1#2#3{% (pgf v2.0: bug in pgfkeys.code.tex)
3197   \edef\pgfkeys@global@temp{%
3198     \unexpanded{#2}%
3199     \ifcsname pgfk@#1\endcsname
3200       \unexpanded\expandafter\expandafter\expandafter{%
3201         \csname pgfk@#1\endcsname}%
3202     \fi
3203     \unexpanded{#3}}%
3204   \pgfkeyslet{#1}\pgfkeys@global@temp
3205 }% \itf@pgfkeysaddvalue
3206 \fi

```

`\pgfkeysEsetvalue``\pgfkeysEaddvalue`

```

3207 \ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf version 2.1
3208 \def\pgfkeysEsetvalue#1#2{%
3209   \expandafter\edef\csname pgfk@#1\endcsname{#2}%
3210 }% \pgfkeysEsetvalue
3211 \ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf v2.1
3212 \def\pgfkeysEaddvalue#1#2#3{% \csepreappto{pgfk@#1}{#2}{#3}
3213   \edef\pgfkeys@global@temp{%
3214     #2%
3215     \ifcsname pgfk@#1\endcsname
3216       \unexpanded\expandafter\expandafter\expandafter{%
3217         \csname pgfk@#1\endcsname}%
3218     \fi
3219     #3}%
3220   \pgfkeyslet{#1}\pgfkeys@global@temp
3221 }% \pgfkeysEaddvalue

```

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

```

3222 %% missed a pair of braces around the argument in pgfkeys.code.tex (pgf v2.0)
3223 %% ( the code could break if it contains = or , )
3224 \ifdefined\pgfkeys@ifexecutehandler\else % (bug corrected in pgf v2.1)
3225   \def\itf@pgfkeys@exp@call#1{\pgfkeysalso{\pgfkeyscurrentpath={#1}}}%
3226 \fi

```

**Handlers `/blank`**

```

3227 %% The value is now checked by \itf@pgfkeys@default@blank@required:
3228 \ifdefined\pgfkeys@ifexecutehandler \long \fi % pgf v2.1
3229 \def\itf@pgfkeys@unpack#1=#2=#3\pgfkeys@stop{%
3230   \pgfkeys@spdef\pgfkeyscurrentkey{#1}%
3231   \edef\pgfkeyscurrentkey{\pgfkeyscurrentkey}%
3232   \ifx\pgfkeyscurrentkey\pgfkeys@empty
3233     % Skip
3234   \else%

```

```

3235 \pgfkeys@add@path@as@needed
3236 \pgfkeys@spdef\pgfkeyscurrentvalue{#2}%
3237 \itf@pgfkeys@default@blank@required % <FC>
3238 \pgfkeyscurrentkey % <FC>
3239 \pgfkeys@case@one % <FC>
3240 \fi
3241}% \itf@pgfkeys@unpack

```

```
\itf@pgfkeys@default@blank@required
```

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

```

3242 \def\itf@pgfkeys@default@blank@required#1#2{%
3243 \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text% Hmm... no value
3244 \pgfkeysifdefined{#1/.@def}%
3245 {\pgfkeysgetvalue{#1/.@def}\pgfkeyscurrentvalue}
3246 {}% no default, so leave it
3247 \fi
3248 \ifx\pgfkeyscurrentvalue\@empty
3249 \pgfkeysifdefined{#1/.@blank}
3250 {\pgfkeysgetvalue{#1/.@blank}\pgfkeyscurrentvalue}
3251 {}% no /.blank specified
3252 \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text% in case /.blank -> \pgfkeysnovalue
3253 \pgfkeysifdefined{#1/.@def}%
3254 {\pgfkeysgetvalue{#1/.@def}\pgfkeyscurrentvalue}
3255 {}% no default, so leave it
3256 \fi\fi
3257 \ifx\pgfkeyscurrentvalue\pgfkeysvaluerequired
3258 \pgfkeysvalueof{/errors/value required/.@cmd}\pgfkeyscurrentkey
3259 \pgfkeyscurrentvalue
3260 \pgfeov
3261 \else
3262 #2%
3263 \fi
3264}% \itf@pgfkeys@default@blank@required

```

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

```

3265%% To handle the cases of: /handler/.default= /handler/.blank= /handler/.value required,
3266%% it is necessary to redefine \pgfkeys@case@three
3267 \def\itf@pgfkeys@case@three{%
3268 \pgfkeys@split@path
3269 \pgfkeysifdefined{/handlers/\pgfkeyscurrentname/.@cmd}
3270 {%
3271 \itf@pgfkeys@default@blank@required{/handlers/\pgfkeyscurrentname}%
3272 {\pgfkeysgetvalue{/handlers/\pgfkeyscurrentname/.@cmd}\pgfkeys@code
3273 \expandafter\pgfkeys@code\pgfkeyscurrentvalue\pgfeov}%
3274 }
3275 \pgfkeys@unknown % no handler, thus the key is unknown
3276}% \itf@pgfkeys@case@three
3277 \ifdefined\pgfkeys@ifexecutehandler
3278 \let\itf@pgfkeys@case@three@handleall \itf@pgfkeys@case@three
3279 \fi

```

### Loading interfaces modifications for `pgfkeys`

```
3280 \itf@pgfkeys
```

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

```

3281 \pgfkeys{%
3282 /handlers/.alias/.code=\itf@pgfkeys@ifaliasexists{#1}{%
3283 \pgfkeysedef\pgfkeyscurrentpath{%
3284 \noexpand\pgfkeysalso{\pgfkeysdefaultpath#1={##1}}},%
3285 /handlers/.alias/.value required,%

```

```

3286 /handlers/.blank/.code=\pgfkeyssetvalue{\pgfkeyscurrentpath/.@blank}{#1},%
3287 /handlers/.blank/.default=\pgfkeysnovalue,%
3288 }% /.alias and /.blank
3289 \def\itf@pgfkeys@ifaliasexists#1#2{%
3290 \pgfkeysifdefined{\pgfkeysdefaultpath#1/.@cmd}{#2}
3291 {\pgfkeysifdefined{\pgfkeysdefaultpath#1}
3292 {#2}
3293 {\itf@pgfkeys@aliaserror{#1}}}%
3294 }% \itf@pgfkeys@ifaliasexists
3295 \def\itf@pgfkeys@aliaserror#1{%
3296 \PackageError{interfaces-pgfkeys}
3297 {You want the key \pgfkeyscurrentpath\space
3298 \MessageBreak to be an alias for \pgfkeysdefaultpath#1
3299 \MessageBreak but the key \pgfkeysdefaultpath#1
3300 \MessageBreak is not defined!}\@eha\@gobble
3301 }% \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).

```

3302 \pgfkeys{
3303 /handlers/.alias*/.code=\itf@pgfkeys@ifaliasexists{#1}{%
3304 \pgfkeysedef\pgfkeyscurrentpath{\noexpand\pgfkeysalso{\pgfkeysdefaultpath#1={##1}}}%
3305 \tfor\x:=+*~\do{%
3306 \pgfkeysifdefined{\pgfkeysdefaultpath#1\x/.@cmd}
3307 {\pgfkeysedef{\pgfkeyscurrentpath\x}{%
3308 \noexpand\pgfkeysalso{\pgfkeysdefaultpath#1\x={##1}}}%
3309 {}}%
3310 }},%
3311 /handlers/.alias*/.value required,%
3312 }% /.alias*

```

**Handler definition: `/.is private`**

```

3313 \pgfkeys{%
3314 /handlers/.is private/.code=\pgfkeysdef\pgfkeyscurrentpath{%
3315 \PackageError{#1}{Key \pgfkeyscurrentkey\space is private
3316 \MessageBreak and should not be modified}\@ehd},%
3317 /handlers/.is private to class/.code=\pgfkeysdef\pgfkeyscurrentpath{%
3318 \ClassError{#1}{Key \pgfkeyscurrentkey\space is private
3319 \MessageBreak and should not be modified}\@ehd}%
3320 }% /.is private

```

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

```

3321 \def\itf@pgfkeys@choice[#1]#2#3{%
3322 \pgfkeys{\pgfkeyscurrentpath/.cd,%
3323 .is choice,%
3324 #2/.code={#3},%
3325 .default/.expanded=\@firstoftwo#1}%
3326 }% \itf@pgfkeys@choice
3327 \pgfkeys{%
3328 /handlers/.true/.code=\itf@pgfkeys@choice[{true}]{false}[{true}]{#1},%
3329 /handlers/.false/.code=\itf@pgfkeys@choice[{true}]{false}[{false}]{#1},%
3330 /handlers/.on/.code=\itf@pgfkeys@choice[{on}]{off}[{on}]{#1},%
3331 /handlers/.off/.code=\itf@pgfkeys@choice[{on}]{off}[{off}]{#1},%
3332 }% /.true /.false

```



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

```

3333 \pgfkeys{%
3334   /handlers/.store in cs/.code=\pgfkeysdef\pgfkeyscurrentpath{\csdef{#1}{##1}},%
3335   /handlers/.estore in cs/.code=\pgfkeysdef\pgfkeyscurrentpath{\csedef{#1}{##1}},%
3336 }% /.store in cs

```

**Handler definition: `/.store as code`**

```

3337 %% /.store as code handlers
3338 \pgfkeys{%
3339   /handlers/.store as code/.code={%
3340     \pgfkeysedef\pgfkeyscurrentpath{%
3341       \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
3342     \pgfkeyslet\pgfkeyscurrentpath\@empty
3343     \pgfkeyslet{\pgfkeyscurrentpath/.@def}\@empty
3344     \@tfor\x:=#1\do{%
3345       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3346         \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3347           \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
3348           \noexpand\unexpanded{##1}}}}%
3349       \pgfkeyslet{\pgfkeyscurrentpath\x/.@def}\@empty
3350     }},%
3351   /handlers/.store as code/.default=*,%
3352 }% /.store as code

```

**Handler definition: `/.estore as code`**

```

3353 \pgfkeys{%
3354   /handlers/.estore as code/.code={%
3355     \pgfkeysedef\pgfkeyscurrentpath{%
3356       \noexpand\pgfkeysEsetvalue{\pgfkeyscurrentpath}{##1}}%
3357     \pgfkeyslet\pgfkeyscurrentpath\@empty
3358     \@tfor\x:=#1\do{%
3359       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3360         \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3361           \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
3362           \noexpand\unexpanded{##1}}}}%
3363     }},%
3364   /handlers/.estore as code/.default=*,%
3365 }% /.estore as code

```

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

```

3366 \pgfkeys{%
3367   /handlers/.store as code in cs/.code={%
3368     \pgfkeysdef\pgfkeyscurrentpath{%
3369       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3370       \else\csdef{#1}{##1}\fi}%
3371     \@tfor\x:=*\do{%
3372       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3373         \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3374           \noexpand\ifcsname#1\endcsname
3375           \noexpand\expandafter\noexpand\expandonce
3376           \noexpand\csname#1\endcsname
3377           \noexpand\fi
3378           \noexpand\unexpanded{##1}}}}%
3379       \pgfkeyslet{\pgfkeyscurrentpath\x/.@def}\@empty
3380     }},%
3381   /handlers/.store as code in cs/.value required,%
3382 }% /.store as code in cs
3383 \pgfkeys{%
3384   /handlers/.estore as code in cs/.code={%

```

```

3385 \pgfkeysdef\pgfkeyscurrentpath{%
3386 \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3387 \else\csdef{##1}{##1}\fi}%
3388 \@tfor\x:=*+\do{%
3389 \pgfkeysedef\pgfkeyscurrentpath\x}{%
3390 \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded=%
3391 \noexpand\ifcsname#1\endcsname
3392 \noexpand\expandafter\noexpand\expandonce
3393 \noexpand\csname#1\endcsname
3394 \noexpand\fi
3395 \noexpand\unexpanded{##1}}}%
3396 }},% default if \pgfkeysnovalue which expands to \@empty
3397 /handlers/.estore as code in cs/.value required,%
3398 }% /.estore as code in cs

```

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

```

3399 \protected\def\itf@pgfk@color#1#2\@nil{%
3400 \ifx\@let@token\color
3401 \def\pgfkeyscurrentvalue{#2}%
3402 \else\ifx\@let@token\normalcolor
3403 \def\pgfkeyscurrentvalue{default}%
3404 \else\ifx\@let@token\pgfkeysnovalue
3405 \def\pgfkeyscurrentvalue{default}%
3406 \fi\fi\fi
3407 }% \itf@pgfk@color
3408 \pgfkeys{%
3409 /handlers/.store as color/.code=%
3410 \pgfkeysedef\pgfkeyscurrentpath{%
3411 \futurelet\noexpand\@let@token\itf@pgfk@color
3412 ##1\noexpand\pgfkeysnovalue\noexpand\@nil
3413 \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
3414 }% /.store as color

```

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

```

3415 \pgfkeys{%
3416 /handlers/.store as color in cs/.code=%
3417 \pgfkeysedef\pgfkeyscurrentpath{%
3418 \futurelet\noexpand\@let@token\itf@pgfk@color
3419 ##1\noexpand\pgfkeysnovalue\noexpand\@nil
3420 \cslet{##1}\noexpand\pgfkeyscurrentvalue}%
3421 }% /.store as color in cs

```

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

```

3422 \protected\def\itf@pgfk@colorcmd#1\@nil{%
3423 \ifcat @\noexpand\@let@token
3424 \def\pgfkeyscurrentvalue{\color{#1}}%
3425 \else\ifcat 0\noexpand\@let@token
3426 \def\pgfkeyscurrentvalue{\color{#1}}%
3427 \else\ifx\@let@token\@nil
3428 \let\pgfkeyscurrentvalue\normalcolor
3429 \fi\fi\fi
3430 }% \itf@pgfk@colorcmd
3431 \pgfkeys{%
3432 /handlers/.store as color command/.code=%
3433 \pgfkeysedef\pgfkeyscurrentpath{%
3434 \futurelet\noexpand\@let@token\itf@pgfk@colorcmd
3435 ##1\noexpand\@nil
3436 \noexpand\pgfkeyslet{\pgfkeyscurrentpath}\noexpand\pgfkeyscurrentvalue}%
3437 \pgfkeyssetvalue{\pgfkeyscurrentpath/.@def}\normalcolor
3438 }% /.store as color command

```

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

```

3439 \pgfkeys{%
3440   /handlers/.store as color command in cs/.code=%
3441     \pgfkeysdef\pgfkeyscurrentpath{%
3442       \futurelet\noexpand\@let@token\itf@pgfk@colorcmd
3443       ##1\noexpand\@nil
3444       \cslet{##1}\noexpand\pgfkeyscurrentvalue}%
3445     \pgfkeyssetvalue{\pgfkeyscurrentpath/.@def}\normalcolor
3446 }% /.store as color command in cs

```

**Handler definition `/.store as number`**

```

3447 \pgfkeys{%
3448   /handlers/.store as number/.code={%
3449     \pgfkeysdef\pgfkeyscurrentpath{%
3450       \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\numexpr##1\relax}}%
3451     \pgfkeyslet\pgfkeyscurrentpath\z@
3452     \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
3453     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3454     \@tfor\x:=#1\do{%
3455       \pgfkeysdef{\pgfkeyscurrentpath\x}{%
3456         \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded=%
3457           \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
3458           \x
3459           \numexpr\unexpanded{##1}\relax}}%
3460       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
3461       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
3462     }},%
3463   /handlers/.store as number/.default=+-*,%
3464 }% /.store as number

```

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

```

3465 \pgfkeys{%
3466   /handlers/.store as number in cs/.code={%
3467     \pgfkeysdef\pgfkeyscurrentpath{%
3468       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3469       \else\csdef{##1}{\numexpr##1\relax}\fi}%
3470     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3471     \@tfor\x:=+-*\do{%
3472       \pgfkeysdef{\pgfkeyscurrentpath\x}{%
3473         \letcs\noexpand\pgfkeys@temp{%
3474           \noexpand\ifcsname#1\endcsname
3475             #1\noexpand\else\if*\x \@ne\else \z@\fi\noexpand\fi}%
3476         \edef\noexpand\pgfkeys@temp{%
3477           \noexpand\pgfkeysalso{\pgfkeyscurrentpath={%
3478             \noexpand\expandonce\noexpand\pgfkeys@temp
3479             \x
3480             \numexpr\noexpand\unexpanded{##1}\relax}}%
3481           }\noexpand\pgfkeys@temp}%
3482         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x\@ne\else\z@\fi}%
3483         \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x\@ne\else\z@\fi}%
3484       }},%
3485   /handlers/.store as number in cs/.value required,%
3486 }% /.store as number in cs

```

**Handler definition: `/.estore as number`**

```

3487 \pgfkeys{%
3488   /handlers/.estore as number/.code={%
3489     \pgfkeysedef\pgfkeyscurrentpath{%
3490       \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{%
3491         \noexpand\number\numexpr##1\relax}}%
3492     \pgfkeyslet\pgfkeyscurrentpath\z@
3493     \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
3494     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3495     \@tfor\x:=#1\do{%
3496       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3497         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3498           \noexpand\pgfkeysvalueof{\pgfkeyscurrentpath}%
3499           \x
3500           \numexpr##1\relax}}%
3501     },%
3502   /handlers/.estore as number/.default=+-*,%
3503 }% /.estore as number

```

**Handler definition: `/.estore as number in cs`**

```

3504 \pgfkeys{%
3505   /handlers/.estore as number in cs/.code={%
3506     \pgfkeysdef\pgfkeyscurrentpath{%
3507       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3508       \else\csedef{#1}{\number\numexpr##1\relax}\fi}%
3509     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3510     \@tfor\x:=+-*\do{%
3511       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3512         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3513           \noexpand\csname\noexpand\ifcsname#1\endcsname
3514             #1\noexpand\else\if*x @ne\else z@\fi\noexpand\fi\endcsname
3515           \x
3516           \numexpr##1\relax}}%
3517       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*x\@ne\else z@\fi}%
3518       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*x\@ne\else z@\fi}%
3519     },%
3520   /handlers/.estore as number in cs/.value required,%
3521 }% /.estore as number in cs

```

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

```

3522 \pgfkeys{%
3523   /handlers/.store in counter cs/.code={%
3524     \pgfkeysdef\pgfkeyscurrentpath{%
3525       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3526       \else\csname#1\endcsname\numexpr##1\relax\fi}%
3527     \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3528     \@tfor\x:=+-*\do{%
3529       \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3530         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3531           \noexpand\csname\noexpand\ifcsname#1\endcsname
3532             #1\noexpand\else\if*x @ne\else z@\fi\noexpand\fi\endcsname
3533           \x
3534           \numexpr##1\relax}}%
3535       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*x\@ne\else z@\fi}%
3536       \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*x\@ne\else z@\fi}%
3537     },%
3538   /handlers/.store in counter cs/.value required,%
3539 }% /.store in counter cs
3540 \pgfkeys{%
3541   /handlers/.store in count cs/.code={%
3542     \pgfkeysdef\pgfkeyscurrentpath{%

```

```

3543      \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3544      \else\csname#1\endcsname\numexpr##1\relax\fi}%
3545      \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3546      \@tfor\x:=+-*\do{%
3547          \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3548              \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3549                  \noexpand\csname\noexpand\ifcsname#1\endcsname
3550                      #1\noexpand\else\if*\x @ne\else z@\fi\noexpand\fi\endcsname
3551                  \x
3552                  \numexpr##1\relax}}}%
3553      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else z@\fi}%
3554      \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else z@\fi}%
3555      }},%
3556      /handlers/.store in count cs/.value required,%
3557 }% /.store in count cs

```

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

```

3558 \pgfkeys{%
3559     /handlers/.store as glue/.code={%
3560         \pgfkeysedef\pgfkeyscurrentpath{%
3561             \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\glueexpr##1\relax}}}%
3562         \pgfkeyslet\pgfkeyscurrentpath\z@skip
3563         \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@skip
3564         \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
3565         \@tfor\x:=#1\do{%
3566             \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3567                 \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded=%
3568                     \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
3569                     \x
3570                     \if*\x\noexpand\itf@units@scaleNoCalc##1!
3571                     \else\glueexpr\noexpand\unexpanded{##1}\relax\fi}}}%
3572             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else z@skip\fi}%
3573             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else z@skip\fi}%
3574             }},%
3575     /handlers/.store as glue/.default=+-*,%
3576 }% /.store as glue

```

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

```

3577 \pgfkeys{%
3578     /handlers/.store as glue in cs/.code={%
3579         \pgfkeysdef\pgfkeyscurrentpath{%
3580             \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3581             \else\csdef{#1}{\glueexpr##1\relax}\fi}%
3582         \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@skip
3583         \@tfor\x:=+-*\do{%
3584             \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3585                 \letcs\noexpand\pgfkeys@temp{%
3586                     \noexpand\ifcsname#1\endcsname
3587                         #1\noexpand\else z@skip\noexpand\fi}%
3588                 \edef\noexpand\pgfkeys@temp{%
3589                     \noexpand\noexpand\noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3590                         \noexpand\expandonce\noexpand\pgfkeys@temp
3591                         \x
3592                         \if*\x\noexpand\itf@units@scaleNoCalc##1!
3593                         \else\glueexpr\noexpand\unexpanded{##1}\relax\fi}}}%
3594                 }\noexpand\pgfkeys@temp}%
3595             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else z@skip\fi}%
3596             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else z@skip\fi}%
3597             }},%
3598     /handlers/.store as glue in cs/.value required,%
3599 }% /.store as glue in cs

```

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

```

3600 \pgfkeys{%
3601   /handlers/.estore as glue/.code={%
3602     \pgfkeysdef\pgfkeyscurrentpath{%
3603       \if@setlength\itf@sk{##1}%
3604       \noexpand\pgfkeysEsetvalue\pgfkeyscurrentpath{%
3605         \noexpand\the\itf@sk}%
3606       \pgfkeyslet\pgfkeyscurrentpath\z@skip
3607       \pgfkeyslet\pgfkeyscurrentpath/.@def\z@skip
3608       \pgfkeyslet\pgfkeyscurrentpath/.@blank\z@skip
3609       \@tfor\x:=#1\do{%
3610         \pgfkeysdef\pgfkeyscurrentpath\x{%
3611           \noexpand\pgfkeysalso\pgfkeyscurrentpath=%
3612           \noexpand\pgfkeysvalueof\pgfkeyscurrentpath\x
3613           \if*\x \noexpand\itf@units@scale##1!
3614           \else\glueexpr##1\relax\fi}%
3615       \pgfkeysEsetvalue\pgfkeyscurrentpath\x/.@def\{if*\x@ne\else\z@skip\fi}%
3616       \pgfkeysEsetvalue\pgfkeyscurrentpath\x/.@blank\{if*\x@ne\else\z@skip\fi}%
3617     }},%
3618   /handlers/.estore as glue/.default=+-*,%
3619 }% /.estore as glue

```

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

```

3620 \pgfkeys{%
3621   /handlers/.estore as glue in cs/.code={%
3622     \pgfkeysdef\pgfkeyscurrentpath{%
3623       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3624       \else\itf@setlength\itf@sk{##1}%
3625       \csdef{##1}\the\itf@sk\fi}%
3626     \pgfkeyslet\pgfkeyscurrentpath/.@blank\z@skip
3627     \@tfor\x:=+-*\do{%
3628       \pgfkeysdef\pgfkeyscurrentpath\x{%
3629         \noexpand\pgfkeysalso\pgfkeyscurrentpath=%
3630         \noexpand\csname\noexpand\ifcsname#1\endcsname
3631         #1\noexpand\else \z@skip\noexpand\fi\endcsname
3632         \x
3633         \if*\x\noexpand\itf@units@scale##1!
3634         \else\glueexpr##1\relax\fi}%
3635     \pgfkeysEsetvalue\pgfkeyscurrentpath\x/.@def\{if*\x@ne\else\z@skip\fi}%
3636     \pgfkeysEsetvalue\pgfkeyscurrentpath\x/.@blank\{if*\x@ne\else\z@skip\fi}%
3637   }},%
3638   /handlers/.estore as glue in cs/.value required,%
3639 }% /.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.

```

3640 \pgfkeys{%
3641   /handlers/.store in skip cs/.code={%
3642     \pgfkeysdef\pgfkeyscurrentpath{%
3643       \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3644       \else\expandafter\itf@setlength\csname#1\endcsname{##1}\fi}%
3645     \pgfkeyslet\pgfkeyscurrentpath/.@blank\z@skip
3646     \@tfor\x:=+-*\do{%
3647       \pgfkeysdef\pgfkeyscurrentpath\x{%
3648         \noexpand\pgfkeysalso\pgfkeyscurrentpath=%
3649         \csname#1\endcsname % should have been defined as a skip (not expandable)
3650         \x
3651         \if*\x\noexpand\itf@units@scale##1!
3652         \else\glueexpr##1\relax\fi}%
3653     \pgfkeysEsetvalue\pgfkeyscurrentpath\x/.@def\{if*\x@ne\else\z@skip\fi}%

```



```

3654 \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*x\@ne\else\z@skip\fi}%
3655 }},%
3656 /handlers/.store in skip cs/.value required,%
3657 }% /.store in skip cs

```

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

```

3658 \pgfkeys{%
3659 /handlers/.store as dimen/.code={%
3660 \pgfkeysedef\pgfkeyscurrentpath{%
3661 \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\dimexpr##1\relax}}%
3662 \pgfkeyslet\pgfkeyscurrentpath\z@
3663 \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
3664 \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3665 \@tfor\x:=#1\do{%
3666 \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3667 \noexpand\pgfkeysalso{\pgfkeyscurrentpath/.expanded={%
3668 \noexpand\pgfkeysvalueof@unexpanded{\pgfkeyscurrentpath}%
3669 \x
3670 \if*x\ \noexpand\itf@units@scaleNoCalc##1!
3671 \else\dimexpr\noexpand\unexpanded{##1}\relax\fi}}%
3672 \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*x\@ne\else\z@\fi}%
3673 \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*x\@ne\else\z@\fi}%
3674 }},%
3675 /handlers/.store as dimen/.default=+-*,%
3676 }% /.store as dimen

```

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

```

3677 \pgfkeys{%
3678 /handlers/.store as dimen in cs/.code={%
3679 \pgfkeysdef\pgfkeyscurrentpath{%
3680 \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3681 \else\csdef{#1}{\dimexpr##1\relax}\fi}%
3682 \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3683 \@tfor\x:=+-*\do{%
3684 \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3685 \letcs\noexpand\pgfkeys@temp{%
3686 \noexpand\ifcsname#1\endcsname
3687 #1\noexpand\else \z@\noexpand\fi}%
3688 \edef\noexpand\pgfkeys@temp{%
3689 \noexpand\noexpand\noexpand\pgfkeysalso{\pgfkeyscurrentpath={%
3690 \noexpand\expandonce\noexpand\pgfkeys@temp
3691 \x
3692 \if*\x\noexpand\itf@units@scaleNoCalc##1!
3693 \else\dimexpr\noexpand\unexpanded{##1}\relax\fi}}%
3694 }\noexpand\pgfkeys@temp}%
3695 \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*x\@ne\else\z@\fi}%
3696 \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*x\@ne\else\z@\fi}%
3697 }},%
3698 /handlers/.store as dimen in cs/.value required,%
3699 }% /.store as dimen in cs {csname}{+-*}

```

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

```

3700 \pgfkeys{%
3701 /handlers/.estore as dimen/.code={%
3702 \pgfkeysedef\pgfkeyscurrentpath{%
3703 \itf@setlength\itf@sk{##1}%
3704 \noexpand\pgfkeysEsetvalue{\pgfkeyscurrentpath}{%
3705 \noexpand\the\dimexpr\itf@sk}}%
3706 \pgfkeyslet\pgfkeyscurrentpath\z@

```

```

3707 \pgfkeyslet{\pgfkeyscurrentpath/.@def}\z@
3708 \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3709 \@tfor\x:=#1\do{%
3710     \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3711         \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3712             \noexpand\pgfkeysvalueof{\pgfkeyscurrentpath}\x
3713             \if*\x \noexpand\itf@units@scale##1!
3714             \else \dimexpr##1\relax\fi}}%
3715     \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3716     \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%
3717     }},%
3718 /handlers/.estore as dimen/.default=+-%,
3719}% /.estore as dimen

```

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

```

3720 \pgfkeys{%
3721     /handlers/.estore as dimen in cs/.code={%
3722         \pgfkeysdef\pgfkeyscurrentpath{%
3723             \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3724             \else \itf@setlength\itf@sk{##1}%
3725             \csedef{#1}{\the\dimexpr\itf@sk}\fi}%
3726         \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3727         \@tfor\x:=+-%\do{%
3728             \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3729                 \noexpand\ifcsname#1\endcsname
3730                 \noexpand\@defaultunits \itf@sk
3731                 \noexpand\csname#1\endcsname pt\relax\noexpand\@nnil
3732                 \noexpand\else \itf@sk \z@ \noexpand\fi
3733                 \if*\x
3734                     \itf@setlength\itf@sk {\itf@sk*\noexpand\itf@units@scale##1!}%
3735                 \else
3736                     \noexpand\@defaultunits\@tempdima ##1pt \relax\noexpand\@nnil
3737                     \advance\itf@sk\x \@tempdima
3738                 \fi
3739                 \noexpand\pgfkeysalso{\pgfkeyscurrentpath=\itf@sk}}%
3740             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3741             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%
3742             }},%
3743     /handlers/.etore as dimen in cs/.value required,%
3744}% /.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.

```

3745 \pgfkeys{%
3746     /handlers/.store in dimen cs/.code={%
3747         \pgfkeysdef\pgfkeyscurrentpath{%
3748             \ifx\pgfkeyscurrentvalue\pgfkeysnovalue@text
3749             \else\expandafter\itf@setlength\csname#1\endcsname{##1}\fi}%
3750         \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\z@
3751         \@tfor\x:=+-%\do{%
3752             \pgfkeysedef{\pgfkeyscurrentpath\x}{%
3753                 \if*\x \else
3754                 \noexpand\@defaultunits\itf@sk ##1pt \relax\noexpand\@nnil
3755                 \fi
3756                 \noexpand\pgfkeysalso{\pgfkeyscurrentpath=%
3757                     \csname#1\endcsname % has been defined as a dimen (not expandable)
3758                     \x
3759                     \if*\x \noexpand\itf@units@scale##1!
3760                     \else\itf@sk\fi}}%
3761             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@def}{\if*\x@ne\else\z@\fi}%
3762             \pgfkeysEsetvalue{\pgfkeyscurrentpath\x/.@blank}{\if*\x@ne\else\z@\fi}%

```

```

3763   }},%
3764   /handlers/.store in dimen cs/.value required,%
3765 }% /.store in dimen cs

```

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

```

3766 \pgfkeys{%
3767   /handlers/.is multiple choice/.code=%
3768     \pgfkeys{\pgfkeyscurrentpath/.cd,%
3769       .unknown/.style={%
3770         /errors/unknown choice value=\pgfkeyscurrentkey\pgfkeyscurrentvalue},%
3771       .code=\expandafter\pgfkeys\expandafter{\pgfkeyscurrentkey/.cd,###1}%
3772     },%
3773   /handlers/.is multiple choice/.value forbidden,%
3774 }% /.is multiple choice

```

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

```

3775 \pgfkeys{%
3776   /handlers/.is enum/.code={%
3777     \itf@cnt\z@
3778     \@for\x:=\pgfkeyscurrentvalue\do{%
3779       \pgfkeysedef{\pgfkeyscurrentpath/\x}{%
3780         \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath}{\x}%
3781         \noexpand\pgfkeyssetvalue{\pgfkeyscurrentpath/.number}{\the\itf@cnt}}%
3782       \ifnum\itf@cnt=\z@
3783         \pgfkeyslet{\pgfkeyscurrentpath/.@def}\x
3784         \pgfkeyslet{\pgfkeyscurrentpath/.@blank}\x
3785       \fi
3786       \advance\itf@cnt\@ne
3787     }%
3788     \pgfkeysalso{\pgfkeyscurrentpath/.is choice}},%
3789   /handlers/.is enum/.value required,%
3790 }% /.is enum

3791 \pgfkeys>

```

## 21.21 Interface etoolbox - etoolbox-like commands

```

3792 (*etoolbox)
3793 \ProvidesPackage{interfaces-etoolbox}
3794   [2011/02/12 v3.0 more etoolbox-like commands (FC)]
3795 \RequirePackage{interfaces-base}
3796 \begingroup\catcode'\&=3
3797   \long\gdef\etb@doitem#1&\do{#1}}
3798 \endgroup

```

```

\preappto
\epreappto
\gpreappto
\xpappto

3799 \providerobustcmd\preappto[3]{%
3800   \edef#1{\unexpanded{#2}\ifdefined#1\expandonce#1\fi\unexpanded{#3}}%
3801 }% \preappto
3802 \providerobustcmd\epreappto[3]{%
3803   \edef#1{#2\ifdefined#1\expandonce#1\fi#3}%
3804 }% \epreappto
3805 \providerobustcmd*\gpreappto{\global\preappto}
3806 \providerobustcmd*\xpappto{\global\epreappto}

\cspreappto
\csepreappto
\csgpreappto
\csxpappto

3807 \providerobustcmd*\cspreappto[1]{%
3808   \csname itf@\ifcsname#1\endcsname
3809     preappto\else defpreapp\fi\expandafter\endcsname
3810     \csname#1\endcsname

```

```

3811 }% \cspreappto
3812 \long\def\itf@preappto#1#2#3{\edef#1{#2\expandonce#1#3}}
3813 \long\def\itf@defpreapp#1#2#3{\edef#1{#2#3}}
3814 \providerobustcmd*\csepreappto[1]{%
3815     \csname itf@{ifcsname#1\endcsname
3816         preappto\else defpreapp\fi\expandafter\endcsname
3817         \csname#1\endcsname
3818 }% \csepreappto
3819 \providerobustcmd*\csgpreappto{\global\cspreappto}
3820 \providerobustcmd*\csxpreappto{\global\csepreappto}

\removefrom
\eremovefrom 3821 \providerobustcmd\removefrom[2]{\in@false
\gremovefrom 3822     \long\def\itf@tp##1\itf@tp{%
\xremovefrom 3823         \in@true
3824         \edef#1{\unexpanded{##1}}%
3825     }\expandafter\itf@removefrom\expandafter{#1}{#2}%
3826 }% \removefrom
3827 \providerobustcmd\eremovefrom[2]{\begingroup
3828     \edef\x{\endgroup\removefrom\noexpand#1{#2}%
3829     }\x
3830 }% \eremovefrom
3831 \providerobustcmd\gremovefrom[2]{%
3832     \removefrom{#1}{#2}%
3833     \global\let#1=#1%
3834 }% \gremovefrom
3835 \providerobustcmd\xremovefrom[2]{%
3836     \eremovefrom{#1}{#2}%
3837     \global\let#1=#1%
3838 }% \xremovefrom

\itf@removefrom

3839 \long\def\itf@removefrom#1#2{% removes #2 (code) from #1 (hook)
3840     \def\in@##1#2##2\in@{\itf@tp##1#2\in@@}%
3841     \def\in@@##1\in@@##2\in@@{%
3842         \ifx\in@##2\else##1\fi
3843     }\expandafter\in@@\in@@#1\itf@tp\in@@#2\in@\in@@
3844 }% \itf@removefrom

\removefromstart
\eremovefromstart 3845 \newrobustcmd\removefromstart[2]{\in@false
\gremovefromstart 3846     \long\def\itf@tp##1\itf@tp{%
\xremovefromstart 3847         \in@true
3848         \edef#1{\unexpanded{##1}}%
3849     }\expandafter\itf@removefromstart\expandafter{#1}{#2}%
3850 }% \removefromstart
3851 \providerobustcmd\eremovefromstart[2]{\begingroup
3852     \edef\x{\endgroup\removefromstart\noexpand#1{#2}%
3853     }\x
3854 }% \eremovefromstart
3855 \providerobustcmd\gremovefromstart[2]{%
3856     \removefromstart{#1}{#2}%
3857     \global\let#1=#1%
3858 }% \gremovefromstart
3859 \providerobustcmd\xremovefromstart[2]{%
3860     \eremovefromstart{#1}{#2}%
3861     \global\let#1=#1%
3862 }% \xremovefromstart

\itf@removefromstart

3863 \long\def\itf@removefromstart#1#2{% removes #2 (code) from #1 (hook)
3864     \long\def\in@##1#2##2\in@{\##1\in@\itf@tp##2\in@@}%
3865     \long\def\in@@##1\in@@##2\in@@{%

```

```
3866      \ifx\in@##1\fi
3867      }\expandafter\in@@\in@#1\itf@tp\in@@#2\in@
3868 }% \itf@removefromstart

3869 </etoolbox>
```

## 22 History

### [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-hyphbmsec.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`.
- 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 `\ttl@{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 conversion `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  $\text{\LaTeX}$ .

`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  $\varepsilon$ -TeX `\marks` registers (useful with `\sectionformat` and `\pagesetup`).

`interfaces` is mainly based on `scrfile.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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