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The gmdoc Package
i.e., gmdoc.sty and gmdocc.cls

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Contents

a. The gmdoc.sty Package[1]

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This is (a documentation of) file gmdoc.sty, intended to be used with LaTeX 2ε as a package for documenting (La)TeX files and to be documented with itself.

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Many thanks to my TeX Guru Marcin Woliński for his TeXnical support.

```
\ifnum\catcode`\@=11 % Why this test here—will come out in chapter The driver.
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{gmdoc}
          [2008/11/22 v0.99r a documenting package (GM)]
\fi
```

Readme

This package is a tool for documenting of (La)TeX packages, classes etc., i.e., the .sty, .cls files etc. The author just writes the code and adds the commentary preceded with % sign (or another properly declared). No special environments are necessary.

The package tends to be (optionally) compatible with the standard doc.sty package, i.e., the .dtx files are also compilable with gmdoc (they may need very little adjustment, in some rather special cases).

The tools are integrated with hyperref's advantages such as hyperlinking of index entries, contents entries and cross-references.

The package also works with XeTeX (switches automatically).

Installation

Unpack the gmdoc-tds.zip archive (this is an archive conforming the TDS standard, see CTAN/tds/tds.pdf) in a texmf directory or put the gmdoc.sty, gmdocc.cls and gmoldcomm.sty somewhere in the texmf/tex/latex branch on your own. (Creating a texmf/tex/latex/gm directory may be advisable if you consider using other packages written by me. And you *have* to use four of them to make gmdoc work.)

You should also install gmverb.sty, gmutils.sty and gmiflink.sty (e.g., put them into the same gm directory). These packages are available on CTAN as separate .zip archives also in TDS-compliant zip archives.

[1] This file has version number v0.99r dated 2008/11/22.

Moreover, you should put the gmglo.ist file, a MakeIndex style for the changes' history, into some texmf/makeindex (sub)directory.

Then you should refresh your TEX distribution's files' database most probably.

Contents of the gmdoc.zip archive

The distribution of the gmdoc package consists of the following five files and a TDS-compliant archive.

gmdoc.sty
gmdocc.cls
gmglo.ist
README
gmdoc.pdf
gmdoc.tds.zip

Compiling of the documentation

The last of the above files (the .pdf, i.e., *this file*) is a documentation compiled from the .sty and .cls files by running XELATEX on the gmdoc.sty twice (`xelatex␣gmdoc.sty` in the directory you wish the documentation to be in, you don't have copy the .sty file there, TEX will find it), then MakeIndex on the gmdoc.idx and gmdoc.glo files, and then XELATEX on gmdoc.sty once more. (Using LATEX instead of XELATEX should do, too.)

MakeIndex shell commands:

```
makeindex -r gmdoc
makeindex -r -s gmglo.ist -o gmdoc.gls gmdoc.glo
```

The `-r` switch is to forbid MakeIndex to make implicit ranges since the (code line) numbers will be hyperlinks.

Compiling the documentation requires the packages: gmdoc (gmdoc.sty and gmdocc.cls), gmutils.sty, gmverb.sty, gmiflink.sty and also some standard packages: hyperref.sty, xcolor.sty, geometry.sty, multicol.sty, lmodern.sty, fontenc.sty that should be installed on your computer by default.

If you had not installed the mwcls classes (available on CTAN and present in TEX Live e.g.), the result of your compilation might differ a bit from the .pdf provided in this .zip archive in formatting: If you had not installed mwcls, the standard article.cls class would be used.

Dependencies

The gmdoc bundle depends on some other packages of mine:

gmutils.sty,
gmverb.sty,
gmiflink.sty
gmeometric (for the driver of The LATEX 2_ε Source)

and also on some standard packages:

hyperref.sty,
color.sty,
geometry.sty,
multicol.sty,
lmodern.sty,
fontenc.sty

that should be installed on your computer by default.

Bonus: base drivers

As a bonus and example of doc-compatibility there are driver files included (cf. Palestrina, *Missa papae Marcelli* ;-):

source2e_gmdoc.tex
docstrip_gmdoc.tex
doc_gmdoc.tex

gmoldcomm.sty
(gmsource2e.ist is generated from source2e_gmdoc.tex)

These drivers typeset the respective files from the

.../texmf-dist/source/latex/base

directory of the TEXLive2007 distribution (they only read that directory).

Probably you should redefine the `\BasePath` macro in them so that it points that directory on your computer.

Introduction

There are very sophisticated and effective tools for documenting LATEX macro packages, namely the doc package and the ltxdoc class. Why did I write another documenting package then?

I like comfort and doc is not comfortable enough for me. It requires special marking of the macro code to be properly typeset when documented. I want TEX to know 'itself' where the code begins and ends, without additional marks.

That's the difference. One more difference, more important for the people for whom the doc's conventions are acceptable, is that gmdoc makes use of hyperref advantages and makes a hyperlinking index and toc entries and the cross-references, too. (The cses in the code maybe in the future.)

The rest is striving to level the very high doc/ltxdoc's standard, such as (optional) numbering of the codelines and authomatic indexing the control sequences e.g.

The doc package was and still is a great inspiration for me and I would like this humble package to be considered as a sort of hommage to it[2]. If I mention copying some code or narrative but do not state the source explicitly, I mean the doc package's documentation (I have v2.1b dated 2004/02/09).

The user interface

Used terms

When I write of a **macro**, I mean a macro in *The TEXbook*'s meaning, i.e., a control sequence whose meaning is `\(e/g/x)defined`. By a **macro's parameter** I mean each of #⟨*digit*⟩s in its definition. When I write about a **macro's argument**, I mean the value (list of tokens) subsituting the corresponding parameter of this macro. (These understandings are according to *The TEXbook*, I hope: TEX is a religion of Book ;-) .)

I'll use a shorthand for 'control sequence', **cs**.

When I talk of a **declaration**, I mean a macro that expands to a certain assignment, such as `\itshape` or `\@onlypreamble{`⟨*cs*⟩`}`.

Talking of declarations, I'll use the **OCSR** acronym as a shorthand for 'observes/ing common TEX scoping rules'.

[2] As Grieg's Piano Concerto is a hommage to the Schumann's.

By a **command** I mean a certain abstract visible to the end user as a cs but consisting possibly of more than one macro. I'll talk of a **command's argument** also in the 'sense -for-the-end-user', e.g., I'll talk of the `\verb` *command's* argument although *the macro* `\verb` has no #⟨*digit*⟩ in its definition.

The **code** to be typeset verbatim (and with all the bells and whistles) is everything that's not commented out in the source file and what is not a leading space(s).

The **commentary** or **narrative** is everything after the comment char till the end of a line. The **comment char** is a character the `\catcode` of which is 14 usually i.e., when the file works; if you don't play with the `\catcodes`, it's just the `%`. When the file is documented with gmdoc, such a char is re`\catcoded` and its rôle is else: it becomes the **code delimiter**.

A line containing any TEX code (not commented out) will be called a **codeline**. A line that begins with (some leading spaces and) a code delimiter will be called a **comment line** or **narration line**.

The **user** of this package will also be addressed as **you**.

Not to favour any particular gender (of the amazingly rich variety, I mean, not of the vulgarly simplified two-element set), in this documentation I use alternating pronouns
`\heshe` of third person (`\heshe` etc. commands provided by gmutils), so let one be not surprised if 'he' sees 'herself' altered in the same sentence :-) .

Preparing of the source file

When (LA)TEX with gmdoc.sty package loaded typesets the comment lines, the code delimiter is ommitted. If the comment continues a codeline, the code delimiter is printed. It's done so because ending a TEX code line with a `%` is just a concatenation with the next line sometimes. Comments longer than one line are typeset continuously with the code delimiters ommitted.

The user should just write his splendid code and brilliant commentary. In the latter she may use usual (LA)TEX commands. The only requirement is, if an argument is divided
`\^^M` in two lines, to end such a dividing line with `\^^M` (\⟨*line end*⟩) or with `^^B` sequence
`^^B` that'll enter the (active) ⟨*char2*⟩ which shall gobble the line end.

Moreover, if he wants to add a meta-comment i.e., a text that doesn't appear in the
`^^A` code layer nor in the narrative, she may use the `^^A` sequence that'll be read by TEX as ⟨*char1*⟩, which in gmdoc is active and defined to gobble the stuff between itself and the line end.

Note that `^^A` behaves much like comment char although it's active in fact: it re`\catcodes` the special characters including `\`, `{` and `}` so you don't have to worry about unbalanced braces or `\ifs` in its scope. But `^^B` doesn't re`\catcode` anything (it would be useless in an argument) so any text between `^^B` and line end has to be balanced.

However, it may be a bit confusing for someone acquainted with the doc conventions. If you don't fancy the `^^B` special sequence, instead you may restore the standard mean-
`\StraightEOL` ing of the line end with the `\StraightEOL` declaration which OCSR. As almost all the control sequences, it may be used also as an environment, i.e., `\begin{StraightEOL}` … `\end{StraightEOL}`. However, if for any reason you don't want to make an envi-
`\QueerEOL` ronment (a group), there's a `\StraightEOL`'s counterpart, the `\QueerEOL` declaration that restores again the queer[3] gmdoc's meaning of the line end. It OCSR, too. One more point to use `\StraightEOL` is where you wish some code lines to be executed both

[3] In my understanding 'queer' and 'straight' are not the opposites excluding each other but the counterparts that may cooperate in harmony for people's good. And, as I try to show with the `\QueerEOL` and `\StraightEOL` declarations, 'queer' may be very useful and recommended while 'straight' is the standard but not necessarily normative.

while loading the file and during the documentation pass (it's analogous to doc's not embracing some code lines in a `macrocode` environment).

As in standard TEXing, one gets a paragraph by a blank line. Such a line should be %ed of course. A fully blank line is considered a blank *code line* and hence results in a vertical space in the documentation. As in the environments for poetry known to me, subsequent blank lines do not increase such a space.

Then he should prepare a main document file, a **driver** henceforth, to set all the required formattings such as `\documentclass`, paper size etc., and load this package with a standard command i.e., `\usepackage{gmdoc}`, just as doc's documentation says:

"If one is going to document a set of macros with the [gm]doc package one has to prepare a special driver file which produces the formatted document. This driver file has the following characteristics:

```
\documentclass[⟨options⟩]{⟨document-class⟩}
\usepackage[⟨options, probably none⟩]{gmdoc}
   ⟨preamble⟩
\begin{document}
   ⟨special input commands⟩
\end{document}
```

"

The main input commands

\DocInput To typeset a source file you may use the `\DocInput` macro that takes the (path and) name of the file *with the extension* as the only argument, e.g., `\DocInput{%⏎mybrilliantpackage.sty}`.

(Note that an *installed* package or class file is findable to TEX even if you don't specify the path.)

\OldDocInput If a source file is written with rather doc than gmdoc in mind, then the `\OldDocInput` command may be more appropriate (e.g., if you break the arguments of commands in the commentary in lines). It also takes the file (path and) name as the argument.

macrocode When using `\OldDocInput`, you have to wrap all the code in `macrocode` environments, which is not necessary when you use `\DocInput`. Moreover, with `\OldDocInput` the `macrocode(*)` environments require to be ended with `%␣␣␣␣␣\end{macrocode(*)}` as in doc. (With `\DocInput` you are not obliged to precede `\end{macrocode(*)}` with The Four Spaces.)

\DocInclude If you wish to document many files in one document, you are provided `\DocInclude` command, analogous to LATEX's `\include` and very likely to ltxdoc's command of the same name. In gmdoc it has one mandatory argument that should be the file name *without extension*, just like for `\include`.

The file extensions supported by `\DocInclude` are .fdd, .dtx, .cls, .sty, .tex and .fd. The macro looks for one of those extensions in the order just given. If you need to document files of other extensions, please let me know and most probably we'll make it possible.

`\DocInclude` has also an optional first argument that is intended to be the path of the included file with the levels separated by / (slash) and also ended with a slash. The path given to `\DocInclude` as the first and optional argument will not appear in the headings nor in the footers.

\maketitle `\DocInclude` redefines `\maketitle` so that it makes a chapter heading or, in the classes that don't support `\chapter`, a part heading, in both cases with respective toc entries. The default assumption is that all the files have the same author(s) so there's no need to print them in the file heading. If you wish the authors names to

\PrintFilesAuthors be printed, you should write `\PrintFilesAuthors` in the preamble or before the rel-

evant \DocIncludes. If you wish to undeclare printing the authors names, there is
\SkipFilesAuthors \SkipFilesAuthors declaration.

Like in ltxdoc, the name of an included file appears in the footer of each page with date and version info (if they are provided).

The \DocIncluded files are numbered with the letters, the lowercase first, as in ltxdoc. Such a filemarker also precedes the index entries, if the (default) codeline index option is in force.

\includeonly As with \include, you may declare \includeonly{⟨*filenames separated by commas*⟩} for the draft versions.

If you want to put the driver into the same .sty or .cls file (see chapter 641 to see how), you may write \DocInput{\jobname.sty}, or \DocInclude{\jobname.sty},
\SelfInclude but there's also a shorthand for the latter \SelfInclude that takes no arguments. By the way, to avoid an infinite recursive input of .aux files in the case of self-inclusion an .auxx file is used instead of (main) .aux.

At the default settings, the \Doc/SelfIncluded files constitute chapters if \chapter is known and parts otherwise. The \maketitles of those files result in the respective headings.

If you prefer more ltxdocish look, in which the files always constitute the parts and those parts have a part's title pages with the file name and the files' \maketitles result
\ltxLookSetup in (article-like) titles not division headings, then you are provided the \ltxLookSetup declaration (allowed only in the preamble). However, even after this declaration the files will be included according to gmdoc's rules not necessarily to the doc's ones (i.e., with minimal marking necessary at the price of active line ends (therefore not allowed between a command and its argument nor inside an argument)).

On the other hand, if you like the look offered by me but you have the files prepared
\olddocIncludes for doc not for gmdoc, then you should declare \olddocIncludes. Unlike the previous one, this may be used anywhere, because I have the account of including both doc-like and gmdoc-like files into one document. This declaration just changes the internal input command and doesn't change the sectioning settings.

It seems possible that you wish to document the 'old-doc' files first and the 'new-doc'
\gmdocIncludes ones after, so the above declaration has its counterpart, \gmdocIncludes, that may be used anywhere, too. Before the respective \DocInclude(s), of course.

Both these declarations OCSR.

If you wish to document your files as with ltxdoc *and* as with doc, you should declare \ltxLookSetup in the preamble *and* \olddocIncludes.

Talking of analogies with ltxdoc, if you like only the page layout provided by that
\ltxPageLayout class, there is the \ltxPageLayout declaration (allowed only in preamble) that only changes the margins and the text width (it's intended to be used with the default paper size). This declaration is contained in the \ltxLookSetup declaration.

If you need to add something at the beginning of the input of file, there's the
\AtBegInput \AtBegInput declaration that takes one mandatory argument which is the stuff to be added. This declaration is global. It may be used more than one time and the arguments of each occurrence of it add up and are put at the beginning of input of every subsequent files.

\AtEndInput Simili modo, for the end of input, there's the \AtEndInput declaration, also one-argument, global and cumulative.

If you need to add something at the beginning of input of only one file, put before
\AtBegInputOnce the respective input command an \AtBegInputOnce{⟨*the stuff to be added*⟩} declaration. It's also global which means that the groups do not limit its scope but it adds its argument only at the first input succeding it (the argument gets wrapped in a macro that's \relaxed at the first use). \AtBegInputOnces add up, too.

\IndexInput

One more input command is `\IndexInput` (the name and idea of effect comes from doc). It takes the same argument as `\DocInput`, the file's (path and) name with extension. (It *has* `\DocInput` inside). It works properly if the input file doesn't contain explicit ⟨*char1*⟩ (`^^A` is OK).

The effect of this command is typesetting of all the input file verbatim, with the code lines numbered and the cses automatically indexed (gmdoc.sty options are in force).

Package options

As many good packages, this also provides some options:

linesnotnum

Due to best TEX documenting traditions the codelines will be numbered. But if the user doesn't wish that, she may turn it off with the `linesnotnum` option.

uresetlinecount

However, if he agrees to have the lines numbered, she may wish to reset the counter of lines himself, e.g., when she documents many source files in one document. Then he may wish the line numbers to be reset with every `{section}`'s turn for instance. This is the rôle of the `uresetlinecount` option, which seems to be a bit obsolete however, since the `\DocInclude` command takes care of a proper reset.

countalllines

Talking of line numbering further, a tradition seems to exist to number only the codelines and not to number the lines of commentary. That's the default behaviour of gmdoc but, if someone wants the comment lines to be numbered too, which may be convenient for reference purposes, she is provided the `countalllines` option. This option switches things to use the `\inputlineno` primitive for codeline numbers so you get the numbers of the source file instead of number only of the codelines. Note however, that there are no hypertargets made to the narration lines and the value of `\ref` is the number of the most recent codeline.

countalllines*

Moreover, if he wants to get the narration lines' number printed, there is the starred version of that option, `countalllines*`. I imagine someone may use it for debug. This option is not finished in details, it causes errors with `\addvspace` because it puts a hyperlabel at every line. When it is in force, all the index entries are referenced with the line numbers and [441] the narration acquires a bit biblical look ;-), [442] as shown in this short example. This option is intended [443] for the draft versions and it is not perfect (as if anything [444] in this package was). As you see, the lines [445] are typeset continuously with the numbers printed.

noindex

By default the makeidx package is loaded and initialized and the cses occurring in the code are automatically (hyper)indexed thanks to the hyperref package. If the user doesn't wish to index anything, she should use the `noindex` option.

pageindex

The index comes two possible ways: with the line numbers (if the lines are numbered) and that's the default, or with the page numbers, if the `pageindex` option is set.

The references in the change history are of the same: when index is line number, then the changes history too.

indexallmacros

By default, gmdoc excludes some 300 cses from being indexed. They are the most common cses, LATEX internal macros and TEX primitives. To learn what cses are excluded actually, see lines 5394–5520.

If you don't want all those exclusions, you may turn them off with the `indexallmacros` option.

If you have ambiguous feelings about whether to let the default exclusions or forbid them, see p. 15 to feed this ambiguity with a couple of declarations.

withmarginpar

In doc package there's a default behaviour of putting marked macro's or environment's name to a marginpar. In the standard classes it's allright but not all the classes support marginpars. That is the reason why this package enables marginparing when in standard classes, enables or disables it due to the respective option when with Marcin Woliński's classes and in any case provides the options `withmarginpar` and

nomarginpar

`nomarginpar`. So, in non-standard classes the default behaviour is to disable marginpars. If the marginpars are enabled in gmdoc, it will put marked control sequences and environments into marginpars (see `\TextUsage` etc.). These options do not affect common using marginpars, which depends on the documentclass.

My suggestion is to make the spaces in the code visible except the leading ones and that's the default. But if you wish all the code spaces to be blank, I give the option
codespacesblank
`codespacesblank` reluctantly. Moreover, if you wish the code spaces to be blank only
\CodeSpacesBlank
in some areas, then there's `\CodeSpacesBlank` declaration (OCSR).
codespacesgrey
Another space formatting option is `codespacesgrey` suggested by Will Robertson. It makes the spaces of code visible only not black but grey. The name of their colour is `visspacesgrey` and by default it's defined as `{gray}{.5}`, you can change it with
\CodeSpacesGrey
xcolor's `\definecolor`. There is also an OCSR declaration `\CodeSpacesGrey`.
If for any reason you wish the code spaces blank in general and visible and grey
\VisSpacesGrey
in `verbatim*`s, use the declaration `\VisSpacesGrey` of the gmverb package. If you like a little tricks, you can also specify `codespacesgrey,␣codespacesblank` in gmdoc options (in this order).

The packages required

gmdoc requires (loads if they're not loaded yet) some other packages of mine, namely gmutils, gmverb, analogous to Frank Mittelbach's shortvrb, and gmiflink for conditional making of hyperlinks. It also requires hyperref, multicol, color and makeidx.

gmverb

The gmverb package redefines the `\verb` command and the `verbatim` environment in such a way that ␣, { and \ are breakable, the first with no 'hyphen' and the other two with the comment char as a hyphen, i.e., {⟨*subsequent text*⟩} breaks into {% ⟨*subsequent text*⟩} and ⟨*text*⟩`\mylittlemacro` breaks into ⟨*text*⟩% `\mylittlemacro`.
As the standard LaTeX one, my `\verb` issues an error when a line end occurs in its
\verbeolOK
scope. But, if you'd like to allow line ends in short verbatims, there's the `\verbeolOK` declaration. The plain `\verb` typesets spaces blank and `\verb*` makes them visible, as in the standard version(s).
\MakeShortVerb
Moreover, gmverb provides the `\MakeShortVerb` declaration that takes a one-char control sequence as the only argument and turns the char used into a short verbatim delimiter, e.g., after

```
\MakeShortVerb*\|
```

(as you see, the declaration has the starred version, which is for visible spaces, and non-starred for blank spaces) to get `\mylittlemacro` you may type `|\mylittlemacro|` instead of `\verb+\mylittlemacro+`. Because the char used in the last example is my favourite and is used this way by DEK in *The TEXbook*'s format, gmverb provides a macro
\dekclubs
`\dekclubs` that expands to the example displayed above.
Be careful because such active chars may interfere with other things, e.g., the | with the vertical line marker in `tabular`s and with the tikz package. If this happens, you can
\DeleteShortVerb
declare e.g., `\DeleteShortVerb\|` and the previous meaning of the char used shall be restored.
One more difference between gmverb and shortvrb is that the chars `\activeated` by `\MakeShortVerb`, behave as if they were 'other' in math mode, so you may type e.g., `$k|n$` to get $k|n$ etc.

gmutils

The gmutils package provides a couple of macros similar to some basic (LA)TeX ones, rather strictly technical and (I hope) tricky, such as `\afterfi`, `\ifnextcat`, `\addtomacro` etc. It's this package that provides the macros for formatting of names of macros and files, such as `\cs`, `\marg`, `\pk` etc.

hyperref The gmdoc package uses a lot of hyperlinking possibilities provided by hyperref which is therefore probably the most important package required. The recommended situation is that the user loads hyperref package with her favourite options *before* loading gmdoc.

If he does not, gmdoc shall load it with *my* favourite options.

gmiflink To avoid an error if a (hyper)referenced label does not exist, gmdoc uses the gmiflink package. It works e.g., in the index when the codeline numbers have been changed: then they are still typeset, only not as hyperlinks but as a common text.

multicol To typeset the index and the change history in balanced columns gmdoc uses the multicol package that seems to be standard these days.

color Also the multicol package, required to define the default colour of the hyperlinks, seems to be standard already, and makeidx.

Automatic marking of definitions

gmdoc implements automatic detection of a couple of definitions. By default it detects all occurrences of the following commands in the code:

1. `\def`, `\newcount`, `\newdimen`, `\newskip`, `\newif`, `\newtoks`, `\newbox`, `\newread`, `\newwrite`, `\newlength`, `\newcommand(*)`, `\renewcommand(*)`, `\providecommand(*)`, `\DeclareRobustCommand(*)`, `\DeclareTextCommand(*)`, `\DeclareTextCommandDefault(*)`, `\DeclareDocumentCommand`,
2. `\newenvironment(*)`, `\renewenvironment(*)`, `\DeclareOption(*)`,
3. `\newcounter`,

   of the xkeyval package:
4. `\define@key`, `\define@boolkey`, `\define@choicekey`, `\DeclareOptionX`,

   and of the kvoptions package:
5. `\DeclareStringOption`, `\DeclareBoolOption`, `\DeclareComplementaryOption`, `\DeclareVoidOption`.

What does 'detects' mean? It means that the main argument of detected command will be marked as defined at this point, i.e. thrown to a margin note and indexed with a 'definition' entry. Moreover, for the definitions 3–5 an alternate index entries will be created: of the cses uderlying those definitions, e.g. `\newcounter{foo}` in the code will result in indexing `foo` and `\c@foo`.

\DeclareDefining If you want to add detection of a defining command not listed above, use the `\DeclareDefining` declaration. It comes in two flavours: 'sauté' and with star. The 'sauté' version (without star and without an optional argument) declares a defining command of the kind of `\def` and `\newcommand`: its main argument, whether wrapped in braces or not, is a cs. The starred version (without the optional argument) declares a defining command of the kind of `\newenvironment` and `\DeclareOption`: whose main mandatory argument is text. Both versions provide an optional argument in which you can set the keys.

type Probably the most important key is `type`. Its default value is `cs` and that is set in the 'sauté' version. Another possible value is `text` and that is set in the starred version. You can also set three other types (any keyval setting of the type overrides the default and 'starred' setting): `dk`, `dox` or `kvo`.

`dk` stands for `\define@key` and is the type of xkeyval definitions of keys (group 4 commands). When detected, it scans furher code for an optional `[`⟨*KVprefix*⟩`]`, mandatory `{`⟨*KVfamily*⟩`}` and mandatory `{`⟨*key name*⟩`}`. The default ⟨*KVprefix*⟩ is `KV`, as in xkeyval.

`dox` stands for `\DeclareOptionX` and launches scanning for an optional `[`⟨*KVprefix*⟩`]`, optional `<`⟨*KVfamily*⟩`>` and mandatory `{`⟨*option name*⟩`}`. Here the default ⟨*KVprefix*⟩ is also `KV` and the default ⟨*KVfamily*⟩ is the input file name. If you want to set another default family (e.g. if the code of foo.sty actually is in file bar.dtx), use

\DeclareDOXHead `\DeclareDOXHead{⟨KVfamily⟩}`. This declaration has an optional first argument that is the default ⟨*KVprefix*⟩ for `\DeclareOptionX` definitions.

`kvo` stands for the kvoptions package by Heiko Oberdiek. This package provides a handful of option defining commands (the group 5 commands). Detection of such a command launches a scan for mandatory `{⟨option name⟩}` and alternate indexing of a cs`\⟨KVOfamily⟩@⟨optionname⟩`. The default ⟨*KVOfamily*⟩ is the input file name. Again,

\DeclareKVOFam if you want to set something else, you are given the `\DeclareKVOFam{⟨KVOfamily⟩}` that sets the default family (and prefix: ⟨*KVOfamily*⟩`@`) for all the commands of group 5.

star Next key recognized by `\DeclareDefining` is `star`. It determines whether the starred version of a defining command should be taken into account. For example, `\newcommand` should be declared with `[star=true]` while `\def` with `[star=false]`. You can also write just `[star]` instead of `[star=true]`. It's the default if the `star` key is omitted.

KVpref There are also `KVpref` and `KVfam` keys if you want to redeclare the xkeyval definitions

KVfam with another default prefix and family.

For example, if you wish `\@namedef` to be detected (the original LaTeX version), declare

```
\DeclareDefining*[star=false]\@namedef
```

or

```
\DeclareDefining[type=text,star=false]\@namedef
```

(as stated above, `*` is equivalent `[type=text]`).

On the other hand, if you want some of the commands listed above *not* to be detected,

\HideDefining write `\HideDefining⟨command⟩` in the commentary. If both ⟨*command*⟩ and ⟨*command**⟩ are detected, then both will be hidden. `\HideDefining` is always `\global`. Later you

\ResumeDefining can resume detection of ⟨*command*⟩ and ⟨*command**⟩ with `\ResumeDefining⟨command⟩` which is always `\global` too. Moreover, if you wish to suspend automatic detection of the defining ⟨*command*⟩ only once (the next occurrence), there is `\HideDefining*` which suspends detection of the next occurrence of ⟨*command*⟩. So, if you wish to 'hide' `\providecommand*` once, write

```
\HideDefining*\providecommand*
```

\HideAllDefining If you wish to turn entire detection mechanism off, write `\HideAllDefining` in the

\ResumeAllDefining narration layer. Then you can resume detection with `\ResumeAllDefining`. Both declarations are `\global`.

The basic definition command, `\def`, seems to me a bit ambiguous. Definitely *not always* it defines important macros. But first of all, if you `\def` a cs excluded from indexing (see section Index ex/inclusions), it will not be marked even if detection of `\def` is on. But if the `\def`'s argument is not excluded from indexing and you still don't want

\UnDef it to be marked at this point, you can write `\HideDefining*\def` or `\UnDef` for short.

If you don't like `\def` to be detected more times, you may write `\HideDefining%`

\HideDef `\def` of course, but there's a shorthand for this: `\HideDef` which has the starred ver-

\HideDef* sion `\HideDef*` equivalent `\UnDef`. To resume detection of `\def` you are provided also

\ResumeDef a shorthand, `\ResumeDef` (but `\ResumeDefining\def` also works).

If you define things not with easily detectable commands, you can mark them 'manually', with the `\Define` declaration described in the next section.

Manual Marking of the Macros and Environments

The concept (taken from doc) is to index virtually all the control sequences occurring in the code. gmdoc does that by default and needs no special command. (See below about exluding some macros from being indexed.)

The next concept (also taken from doc) is to ditinguish some occurrences of some control sequences by putting such a sequence into a marginpar and by special formatting of its index entry. That is what I call marking the macros. gmdoc provides also a possibility of analogous marking for the environments' names and other sequences such as `^^A`.

This package provides two kinds of special formatting of the index entries: 'usage', with the reference number italic by default, and 'def' (in doc called 'main'), with the reference number roman (upright) and underlined by default. All the reference numbers, also those with no special formatting, are made hyperlinks to the page or the codeline according to the respective indexing option (see p. 10).

The macros and environments to be marked appear either in the code or in the commentary. But all the definitions appear in the code, I suppose. Therefore the 'def' marking macro is provided only for the code case. So we have the `\Define`, `\CodeUsage` and `\TextUsage` commands.

\Define
\CodeUsage
\TextUsage

All three take one argument and all three may be starred. The non-starred versions are intended to take a control sequence as the argument and the starred to take whatever (an environment name or a `^^A`-like and also a cs).

You don't have to bother whether `@` is a letter while documenting because even if not, these commands do make it a letter, or more precisely, they execute `\MakePrivateLetters` whatever it does: At the default settings this command makes `*` a letter, too, so a starred version of a command is a proper argument to any of the three commands unstarred.

\MakePrivateLetters

The `\Define` and `\CodeUsage` commands, if unstarred, mark the next scanned occurrence of their argument in the code. (By 'scanned occurrence' I mean a situation of the cs having been scanned in the code which happens iff its name was preceded by the char declared as `\CodeEscapeChar`). The starred versions of those commands mark just the next codeline and don't make TEX looks for the scanned occurrence of their argument (which would never happen if the argument is not a cs). Therefore, if you want to mark a definition of an environment `foo`, you should put

```
%\Define*{foo}
```

right before the code line

```
\newenvironment{foo}{%
```

i.e., not separated by another code line. The starred versions of the `\Code...` commands are also intended to mark implicit definitions of macros, e.g., `\Define*\@foofalse` before the line

```
\newif\if@foo.
```

They both are `\outer` to dicourage their use inside macros because they actually re`\catcode` before taking their arguments.

The `\TextUsage` (one-argument) command is intended to mark usage of a verbatim occurrence of a TEX object in the commentary. Unlike `\CodeUsage` or `\Define`, it typesets its argument which means among others that the marginpar appears usually at the same line as the text you wanted to mark. This command also has the starred version primarily intended for the environments names, and secondarily for `^^A`-likes and cses, too. Currently, the most important difference is that the unstarred version executes `\MakePrivateLetters` while the starred does both `\MakePrivateLetters` and `\MakePrivateOthers` before reading the argument.

If you consider the marginpars a sort of sub(sub...)section marks, then you may wish to have a command that makes a marginpar of the desired cs(or whatever) at the beginning of its description, which may be fairly far from the first occurrence of its object. Then you have the `\Describe` command which puts its argument in a marginpar and indexes it as a 'usage' entry but doesn't print it in the text. It's `\outer`.

\Describe

All four commands just described put their (\stringed) argument into a marginpar (if the marginpars are enabled) and create an index entry (if indexing is enabled).

\CodeMarginize
\TextMarginize

But what if you want just to make a marginpar with macro's or environment's name? Then you have \CodeMarginize to declare what to put into a marginpar in the TEX code (it's \outer) and \TextMarginize to do so in the commentary. According to the spirit of this part of the interface, these commands also take one argument and have their starred versions for strings other than control sequences.

\marginpartt

The marginpars (if enabled) are 'reverse' i.e., at the left margin, and their contents is flush right and typeset in a font declared with \marginpartt. By default, this declaration is \let to \tt but it may be advisable to choose a condensed font if there is any. Such a choice is made by gmdocc.cls if the Latin Modern fonts are available: in this case gmdocc.cls uses Latin Modern Typewriter Light Condensed.

\gmdmarginpar

If you need to put something in a marginpar without making it typewriter font, there's the \gmdmarginpar macro (that takes one and mandatory argument) that only flushes its contents right.

\DefIndex
\CodeUsgIndex

On the other hand, if you don't want to put a cs(or another verbatim text) in a marginpar but only to index it, then there are \DefIndex and \CodeUsgIndex to declare special formatting of an entry. The unstarred versions of these commands look for their argument's scanned occurrence in the code (the argument should be a cs), and the starred ones just take the next code line as the reference point. Both these commands are \outer.

\CodeCommonIndex*

In the code all the control sequences (except the excluded ones, see below) are indexed by default so no explicit command is needed for that. But the environments and other special sequences are not and the two commands described above in their *ed versions contain the command for indexing their argument. But what if you wish to index a not scanned stuff as a usual entry? The \CodeCommonIndex* comes in rescue, starred for the symmetry with the two previous commands (without * it just gobbles it's argument—it's indexed automatically anyway). It's \outer.

\TextUsgIndex
\TextCommonIndex

Similarly, to index a TEX object occurring verbatim in the narrative, you have \TextUsgIndex and \TextCommonIndex commands with their starless versions for a cs argument and the starred for all kinds of the argument.

macro
environment

Moreover, as in doc, the macro and environment environments are provided. Both take one argument that should be a cs for macro and 'whatever' for environment. Both add the \MacroTopsep glue before and after their contents, and put their argument in a marginpar at the first line of their contents (since it's done with \strut, you should not put any blank line (%ed or not) between \begin{macro/environment} and the first line of the contents). Then macro commands the first scanned occurrence of its argument to be indexed as 'def' entry and environment commands TEX to index the argument as if it occurred in the next code line (also as 'def' entry).

Since it's possible that you define a cs implicitly i.e., in such a way that it cannot be scanned in the definition (with \csname...\endcsname e.g.) and wrapping such a definition (and description) in an environment environment would look misguidedly ugly, there's the macro* environment which TEXnically is just an alias for environment.

(To be honest, if you give a macro environment a non-cs argument, it will accept it and then it'll work as evironment.)

Index ex/inclusions

\DoNotIndex

It's understandable[4] that you don't want some control sequences to be indexed in your documentation. The doc package gives a brilliant solution: the \DoNotIndex declaration. So do I (although here, TEXnically it's done another way). It ocsr. This declaration

[4] After reading doc's documentation ;-) .

takes one argument consisting of a list of control sequences not to be indexed. The items of this list may be separated with commas, as in doc, but it's not obligatory. The whole list should come in curly braces (except when it's one-element), e.g.,

```
\DoNotIndex{\some@macros,\are*␣\too\auxiliary\?}
```

(The spaces after the control sequences are ignored.) You may use as many `\DoNotIndex`es as you wish (about half as many as many cses may be declared, because for each cs excluded from indexing a special cs is declared that stores the ban sentence). Excluding the same cs more than once makes no problem.

I assume you wish most of LaTeX macros, TeX primitives etc. to be excluded from your index (as I do). Therefore gmdoc excludes some 300 cses by default. If you don't like it, just set the `indexallmacros` package option.

On the third hand, if you like the default exclusions in general but wish to undo just a couple of them, you are given `\DoIndex` declaration (ocsr) that removes a ban on all the cses given in the argument, e.g.,

\DoIndex

```
\DoIndex{\par␣\@@par␣\endgraf}
```

Moreover, you are provided the `\DefaultIndexExclusions` and `\UndoDefaultIndexExclusions` declarations that act according to their names. You may use them in any configuration with the `indexallmacros` option. Both of these declarations ocsr.

\DefaultIndexExclusions
\UndoDefaultIndexExclusions

The DocStrip directives

gmdoc typesets the DocStrip directives and it does it quite likely as doc, i.e., with math sans serif font. It does it automatically whether you use the traditional settings or the new.

Advised by my TeX Guru, I didn't implement the module nesting recognition (MW told it's not that important.)

So far verbatim mode directive is only half-handled. That is, a line beginning with %<<⟨*END-TAG*⟩ will be typeset as a DocStrip directive, but the closing line %⟨*END-TAG*⟩ will be not. It doesn't seem to be hard to implement, if I only receive some message it's really useful for someone.

The changes history

The doc's documentation reads:

"To maintain a change history within the file, the `\changes` command may be placed amongst the description part of the changed code. It takes three arguments, thus:

`\changes{`⟨*version*⟩`}{`⟨*yyyy/mm/dd date*⟩`}{`⟨*text*⟩`}`

The changes may be used to produce an auxiliary file (LaTeX's `\glossary` mechanism is used for this) which may be printed after suitable formatting. The `\changes` [command] encloses the ⟨*date*⟩ in parentheses and appends the ⟨*text*⟩ to form the printed entry in such a change history [… obsolete remark ommitted].

To cause the change information to be written out, include `\RecordChanges` in the driver['s preamble or just in the source file (gmdocc.cls does it for you)]. To read in and print the sorted change history (in two columns), just put the `\PrintChanges` command as the last (commented-out, and thus executed during the documentation pass through the file) command in your package file [or in the driver]. Alternatively, this command may form one of the arguments of the `\StopEventually` command, although a change history is probably not required if only the description is being printed. The command assumes that MakeIndex or some other program has processed the .glo file to generate a sorted .gls file. You need a special MakeIndex style file; a suitable one is supplied with doc [and gmdoc], called [… **gmglo.ist** for gmdoc]. The `\GlossaryMin`,

\RecordChanges
\PrintChanges
\GlossaryMin

\GlossaryPrologue
\GlossaryParms

`\GlossaryPrologue` and `\GlossaryParms` macros are analagous to the `\Index...` versions [see sec. The parameters p. 20]. (The LaTeX 'glossary' mechanism is used for the change entries.)"

In gmdoc (unless you turn definitions detection off), you can put `\changes` after the line of definition of a command to set the default argument of `\changes` to that command. For example,

```
\newcommand*\dodecaphonic{...}
% \changes{v0.99e}{2007/04/29}{renamed from \cs{DodecaPhonic}}
```

results with a history (sub)entry:

v0.99e
(...)
`\dodecaphonic`:
renamed from `\DodecaPhonic`, 17

Such a setting is in force till the next definition and *every* detected definition resets it. In gmdoc `\changes` is `\outer`.

As mentioned in the introduction, the glossary, the changes history that is, uses a special MakeIndex style, gmglo.ist. This style declares another set of the control chars but you don't have to worry: `\changes` takes care of setting them properly. To be precise, `\changes` executes `\MakeGlossaryControls` that is defined as

\MakeGlossaryControls

```
\def\actualchar{=} \def\quotechar{!}%
\def\levelchar{>} \edef\encapchar{\xiiclub}
```

Only if you want to add a control character yourself in a changes entry, to quote some char, that is (using level or encapsulation chars is not recommended since `\changes` uses them itself), use rather `\quotechar`.

Before writing an entry to the .glo file, `\changes` checks if the date (the second mandatory = the third argument) is later than the date stored in the counter `ChangesStartDate`. You may set this counter with a

\ChangesStartDate
\ChangesStart

`\ChangesStart{`⟨*version*⟩`}{`⟨*year*⟩`/`⟨*month*⟩`/`⟨*day*⟩`}`

declaration.

If the `ChangesStartDate` is set to a date contemporary to TeX i.e., not earlier than September 1982[5], then a note shall appear at the beginning of the changes history that informs the reader of ommitting the earlier changes entries.

If the date stored in `ChangesStartDate` is earlier than TeX, no notification of ommitting shall be printed. This is intended for a rather tricky usage of the changes start date feature: you may establish two threads of the changes history: the one for the users, dated with four digit year, and the other for yourself only, dated with two or three digit year. If you declare

`\ChangesStart{`⟨*version?*⟩`}{1000/00/00}`

or so, the changes entries dated with less-than-four digit year shall be ommitted and no notification shall be issued of that.

While scanning the cses in the code, gmdoc counts them and prints the information about their number on the terminal and in .log. Moreover, you may declare `\CheckSum{`⟨*number*⟩`}` before the code and TeX will inform you whether the number stated by you is correct or not, and what it is. As you guess, it's not my original idea but I took it from doc.

\CheckSum

[5] DEK in *TeX The Program* mentions that month as of TeX Version 0 release.

There it is provided as a tool for testing whether the file is corrupted. My TEX Guru says it's a bit old-fashioned nowadays but I like the idea and use it to document the file's growth. For this purpose gmdoc types out lines like

```
% \chschange{v0.98j}{2006/10/19}{4372}
% \chschange{v0.98j}{06/10/19}{4372}
```

and you may place them at the beginning of the source file. Such a line results in setting the check sum to the number contained in the last pair of braces and in making a 'general' changes entry that states the check sum for version ⟨*first brace*⟩ dated ⟨*second brace*⟩ was ⟨*third brace*⟩.

\toCTAN There is also `\toCTAN{`⟨*version*⟩`}{`⟨*date*⟩`}`, a shorthand for

`\changes{`⟨*version*⟩`}{`⟨*date*⟩`}{put␣to␣\acro{CTAN}␣on␣`⟨*date*⟩`}`

The parameters

The gmdoc package provides some parameters specific to typesetting the TEX code:

\stanzaskip `\stanzaskip` is a vertical space inserted when a blank (code) line is met. It's equal `0.75\medskipamount` by default (with the *entire* `\medskipamount`'s stretch- and shrinkability). Subsequent blank code lines do not increase this space.

At the points where narration begins a new line after the code or an inline comment and where a new code line begins after the narration (that is not an inline comment),
\CodeTopsep a `\CodeTopsep` glue is added. At the beginning and the end of a `macro` or `environment` environment a `\MacroTopsep` glue is added. By default, these two skips are set equal `\stanzaskip`.

The `\stanzaskip`'s value is assigned also to the display skips and to `\topsep`. This
\UniformSkips is done with the `\UniformSkips` declaration executed by default. If you want to change
\NonUniformSkips some of those values, you should declare `\NonUniformSkips` in the preamble to discard the default declaration. (To be more precise, by default `\UniformSkips` is executed twice: when loading gmdoc and again `\AtBeginDocument` to allow you to change `\stanzaskip` and have the other glues set due to it. `\NonUniformSkips` relaxes the `\UniformSkips`'s occurrence at `\begin{document}`.)

If you want to add a vertical space of `\CodeTopsep` (equal by default `\stanzaskip`),
\stanza you are provided the `\stanza` command. Similarly, if you want to add a vertical space of the `\MacroTopsep` amount (by default also equal `\stanzaskip`), you are given the
\chunkskip `\chunkskip` command. They both act analogously to `\addvspace` i.e., don't add two consecutive glues but put the bigger of them.

Since `\CodeTopsep` glue is inserted automatically at each transition from the code (or code with an inline comment) to the narration and reverse, it may happen that you
\nostanza want not to add such a glue exceptionally. Then there's the `\nostanza` command. You can use it before narration to remove the vskip before it or after narration to suppress the vskip after it.

\CodeIndent The TEX code is indented with the `\CodeIndent` glue and a leading space increases indentation of the line by its (space's) width. The default value of `\CodeIndent` is 1.5 em.

\TextIndent There's also a parameter for the indent of the narration, `\TextIndent`, but you should use it only in emergency (otherwise what would be the margins for?). It's 0 sp by default.

By default, the end of a `\DocInput` file is marked with

′ □′

\EOFMark given by the `\EOFMark` macro.

\everyeof If you do use the ε-TEX's primitive `\everyeof`, be sure the contents of it begins with `\relax` because it's the token that stops the main macro scanning the code.

The crucial concept of gmdoc is to use the line end character as a verbatim group opener and the comment char, usually the %, as its delimiter. Therefore the 'knowledge' what char starts a commentary is for this package crucial and utterly important. The default assumption is that you use % as we all do. So, if you use another character, then you should declare it with `\CodeDelim` typing the desired char preceded by a backslash, e.g., `\CodeDelim\&`. (As just mentioned implicitly, `\CodeDelim\%` is declared by deafult.)

\CodeDelim

This declaration is always global so when- and wherever you change your mind you should express it with a new `\CodeDelim` declaration.

The starred version of `\CodeDelim` changes also the verb 'hyphen', the char appearing at the verbatim line breaks that is.

Talking of special chars, the escape char, \ by default, is also very important for this package as it marks control sequences and allows automatic indexing them for instance. Therefore, if you for any reason choose another than \ character to be the escape char, you should tell gmdoc about it with the `\CodeEscapeChar` declaration. As the previous one, this too takes its argument preceded by a backslash, e.g., `\CodeEscapeChar\!`. (As you may deduct from the above, `\CodeEscapeChar\\` is declared by default.)

\CodeEscapeChar

The tradition is that in the packages `@` char is a letter i.e., of catcode $_{11}$. Frank Mittelbach in doc takes into account a possibility that a user wishes some other chars to be letters, too, and therefore he (F.M.) provides the `\MakePrivateLetters` macro. So do I and like in doc, this macro makes `@` sign a letter. It also makes `*` a letter in order to cover the starred versions of commands.

\MakePrivateLetters

Analogously but for a slightly different purpose, the `\AddtoPrivateOthers` macro is provided here. It adds its argument, which is supposed to be a one-char cs, to the `\doprivateothers` list, whose rôle is to allow some special chars to appear in the marking commands' arguments (the commands described in section Macros for marking the macros). The default contents of this list is ␣ (the space) and `^` so you may mark the environments names and special sequences like `^^A` safely. This list is also extended with every char that is `\MakeShortVerb`ed. (I don't see a need of removing chars from this list, but if you do, please let me know.)

\AddtoPrivateOthers

The line numbers (if enabled) are typeset in the `\LineNumFont` declaration's scope, which is defined as `{\normalfont\tiny}` by default. Let us also remember, that for each counter there is a `\the`⟨*counter*⟩ macro available. The counter for the line numbers is called `codelinenum` so the macro printing it is `\thecodelinenum`. By default we don't change its LaTeX's definition which is equivalent `\arabic{codelinenum}`.

\LineNumFont

codelinenum

Three more parameter macros, are `\IndexPrefix`, `\EntryPrefix` and `\HLPrefix`. All three are provided with the account of including multiple files in one document. They are equal (almost) `\@empty` by default. The first may store main level index entry of which all indexed macros and environments would be subentries, e.g., the name of the package. The third may or even should store a text to distinguish equal codeline numbers of distinct source files. It may be the file name too, of course. The second macro is intended for another concept, namely the one from ltxdoc class, to distinguish the codeline numbers from different files *in the index* by the file marker. Anyway, if you document just one file per document, there's no need of redefining those macros, nor when you input multiple files with `\DocInclude`.

\IndexPrefix
\EntryPrefix
\HLPrefix

gmdoc automatically indexes the control sequences occurring in the code. Their index entries may be 'common' or distinguished in two (more) ways. The concept is to distinguish the entries indicating the *usage* of the cs and the entries indicating the *definition* of the cs.

The special formattings of 'usage' and 'def' index entries are determined by `\UsgEntry` and `\DefEntry` one-parameter macros (the parameter shall be substituted with

\UsgEntry
\DefEntry

the reference number) and by default are defined as \textit and \underline respectively (as in doc).

\CommonEntryCmd There's one more parameter macro, \CommonEntryCmd that stores the name of the encapsulation for the 'common' index entries (not special) i.e., a word that'll become a cs that will be put before an entry in the .ind file. By default it's defined as {% relax} and a nontrivial use of it you may see in the source of chapter 641, where \def% \CommonEntryCmd{UsgEntry} makes all the index entries of the driver formatted as 'usage'.

The index comes in a multicols environment whose columns number is determined by the IndexColumns counter set by default to 3. To save space, the index begins at the same page as the previous text provided there is at least \IndexMin of the page height free. By default, \IndexMin = 133.0pt.

\IndexPrologue The text put at the beginning of the index is declared with a one-argument \IndexPrologue. Its default text at current index option you may admire on page 200. Of course, you may write your own \IndexPrologue{⟨*brand new index prologue*⟩}, but if you like the default and want only to add something to it, you are provided \AtDIPrologue \AtDIPrologue one-argument declaration that adds the stuff after the default text. For instance, I used it to add a label and hypertarget that is referred to two sentences earlier.

\IndexLinksBlack By default the colour of the index entry hyperlinks is set black to let Adobe Reader work faster. If you don't want this, \let\IndexLinksBlack\relax. That leaves the index links colour alone and hides the text about black links from the default index prologue.

\IndexParms Other index parameters are set with the \IndexParms macro defined in line 5632 of the code. If you want to change some of them, you don't have to use \renewcommand*% \gaddtomacro \IndexParms and set all of the parameters: you may \gaddtomacro\IndexParms{% ⟨*only the desired changes*⟩}. (\gaddtomacro is an alias for LaTeX's \g@addto@macro provided by gmutils.)

At the default gmdoc settings the .idx file is prepared for the default settings of MakeIndex (no special style). Therefore the index control chars are as usual. But if you need to use other chars as MakeIndex controls, know that they are stored in the \actualchar four macros: \actualchar, \quotechar, \levelchar and \encapchar whose meaning you infer from their names. Any redefinition of them *should be done in the preamble* because the first usage of them takes place at \begin{document} and on it depends further tests telling TeX what characters of a scanned cs name it should quote before writing it to the .idx file.

Frank Mittelbach in doc provides the \verbatimchar macro to (re)define the \verb's delimiter for the index entries of the scanned cs names etc. gmdoc also uses \verbatimchar but defines it as {&}. Moreover, a macro that wraps a cs name in \verb checks whether the wrapped cs isn't \& and if it is, $ is taken as the delimiter. So there's hardly chance that you'll need to redefine \verbatimchar.

So strange delimiters are chosen deliberately to allow any 'other' chars in the environments names.

\StopEventually There's a quadratus of commands taken from doc: \StopEventually, \Finale, \Finale \AlsoImplementation and \OnlyDescription that should be explained simultaneously (in a polyphonic song e.g.).

\AlsoImplementation The \OnlyDescription and \AlsoImplementation declarations are intended to exclude or include the code part from the documentation. The point between the description and the implementation part should be marked with \StopEventually{% ⟨*the stuff to be executed anyway*⟩} and \Finale should be typed at the end of file. Then \OnlyDescription defines \StopEventually to expand to its argument followed by \endinput and

\AlsoImplementation defines \StopEventually to do nothing but pass its argument to \Finale.

The narration macros

\verb To print the control sequences' names you have the \verb macro and its 'shortverb' version whatever you define (see the gmverb package).

\inverb For short verbatim texts in the inline comments gmdoc provides the \inverb⟨*charX*⟩…⟨*charX*⟩ (the name stands for 'inline verbatim') command that redefines the gmverb breakables to break with % at the beginning of the lower line to avoid mistaking such a broken verbatim commentary text for the code.

But nor \verb(*) neither \inverb will work if you put them in an argument of another macro. For such a situation, or if you just prefer, gmdoc (gmutils) provides a robust

\cs command \cs, which takes one obligatory argument, the macro's name without the backslash, e.g., \cs{mymacro} produces \mymacro. I take account of a need of printing some other text verbatim, too, and therefore \cs has the first argument optional, which is the text to be typeset before the mandatory argument. It's the backslash by default, but if you wish to typeset something without the \, you may write \cs[]{% not␣␣a~macro}. Moreover, for typesetting the environments' names, gmdoc (gmutils)

\env provides the \env macro, that prints its argument verbatim and without a backslash, e.g., \env{an␣environment} produces an environment.

\incs For usage in the inline comments there are \incs and \inenv commands that take

\inenv analogous arguments and precede the typeset command and environment names with a % if at the beginning of a new line.

\nlpercent And for line breaking at \cs and \env there is \nlpercent to ensure % if the line

\+ breaks at the beginning of a \cs or \env and \+ to use inside their argument for a discretionary hyphen that'll break to - at the end of the upper line and % at the beginning of the lower line. By default hyphenation of \cs and \env arguments is off, you can allow it only at \- or \+.

By default the multiline inline comments are typeset with a hanging indent (that is constant relatively to the current indent of the code) and justified. Since vertical alignment is determined by the parameters as they are at the moment of \par, no one can set the code line to be typeset ragged right (to break nicely if it's long) and the following inline comment to be justified. Moreover, because of the hanging indent the lines of multiline inline comments are relatively short, you may get lots of overfulls. Therefore there

\ilrr is a Boolean switch \ilrr (OCSR), whose name stands for 'InLine RaggedRight' and the inline comments (and their codelines) are typeset justified in the scope of \ilrrfalse which is the default. When you write \ilrrtrue, then all inline comments in its scope (and their codelines) will be typeset ragged right (and still with the hanging indent).

\ilrr Moreover, you are provided \ilrr and \ilju commands that set \ilrrtrue and

\ilju \ilrrfalse for the current inline comment only. Note you can use them anywhere within such a comment, as they set \rightskip basically. \ilrr and \ilju are no-ops in the standalone narration.

\pk To print packages' names sans serif there is a \pk one-argument command, and the

\file \file command intended for the filenames.

Because we play a lot with the \catcodes here and want to talk about it, there are

\catletter \catletter, \catother and \catactive macros that print $_{11}$, $_{12}$ and $_{13}$ respectively

\catother to concisely mark the most used char categories.

\catactive I wish my self-documenting code to be able to be typeset each package separately or several in one document. Therefore I need some 'flexible' sectioning commands and

\division here they are: \division, \subdivision and \subsubdivision so far, that by default

\subdivision are \let to be \section, \subsection and \subsubsection respectively.

\subsubdivision

One more kind of flexibility is to allow using mwcls or the standard classes for the same file. There was a trouble with the number and order of the optional arguments of the original mwcls's sectioning commands.

It's resolved in gmutils so you are free at this point, and even more free than in the standard classes: if you give a sectioning command just one optional argument, it will be the title to toc and to the running head (that's standard in scls[6]). If you give *two* optionals, the first will go to the running head and the other to toc. (In both cases the mandatory argument goes only to the page).

\SetFileDiv

If you wish the `\DocIncluded` files make other sectionings than the default, you may declare `\SetFileDiv{`⟨*sec name without backslash*⟩`}`.

gmlonely
\skipgmlonely

gmdoc.sty provides also an environment `gmlonely` to wrap some text you think you may want to skip some day. When that day comes, you write `\skipgmlonely` before the instances of `gmlonely` you want to skip. This declaration has an optional argument which is for a text that'll appear in(stead of) the first `gmlonely`'s instance in every `\DocInput` or `\DocIncluded` file within `\skipgmlonely`'s scope.

An example of use you may see in this documentation: the repeated passages about the installation and compiling the documentation are skipped in further chapters thanks to it.

gmdoc (gmutils, to be precise) provides some TEX-related logos:

\AmSTeX typesets $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX,
\BibTeX BIBTEX,
\SliTeX SLITEX,
\PlainTeX PLAIN TEX,
\Web WEB,
\TeXbook *The TEXbook*,
\TB *The TEXbook*
\eTeX ε-TEX,
\pdfeTeX pdfε-TEX
\pdfTeX pdfTEX
\XeTeX XƎTEX (the first E will be reversed if the graphics package is loaded or XƎTEX is at work) and
\LaTeXpar (LA)TEX.
\ds DocStrip not quite a logo, but still convenient.

copyrnote

The `copyrnote` environment is provided to format the copyright note flush left in `\obeylines`' scope.

\gmdmarginpar

To put an arbitrary text into a marginpar and have it flushed right just like the macros' names, you are provided the `\gmdmarginpar` macro that takes one mandatory argument which is the contents of the marginpar.

\stanza
\chunkskip

To make a vertical space to separate some piece of text you are given two macros: `\stanza` and `\chunkskip`. The first adds `\stanzaskip` while the latter `\MacroTopsep`. Both of them take care of not cumulating the vspaces.

quotation

The `quotation` environment is redefined just to enclose its contents in double quotes.

If you don't like it, just call `\RestoreEnvironment{quotation}` after loading gmdoc. Note however that other environments using `quotation`, such as `abstract`, keep their shape.

\GetFileInfo
\filedate
\fileversion
\fileinfo

The `\GetFileInfo{`⟨*file name with extension*⟩`}` command defines `\filedate`, `\fileversion` and `\fileinfo` as the respective pieces of the info (the optional argument)

[6] See gmutils for some subtle details.

provided by \ProvidesClass/Package/File declarations. The information of the file you process with gmdoc is provided (and therefore getable) if the file is also loaded (or the \Provide... line occurs in a \StraightEOL scope).

If the input file doesn't contain \Provides... in the code layer, there are com-
\ProvideFileInfo mands \ProvideFileInfo{⟨*file name with extension*⟩}[⟨*info*⟩]. (⟨*info*⟩ should consist of: ⟨*year*⟩/⟨*month*⟩/⟨*day*⟩␣⟨*version number*⟩␣⟨*a short note*⟩.)

Since we may documentally input files that we don't load, doc in gmdoc e.g., we provide a declaration to be put (in the comment layer) before the line(s) containing
\FileInfo \Provides.... The \FileInfo command takes the subsequent stuff till the closing] and subsequent line end, extracts from it the info and writes it to the .aux and rescans the stuff. We use an ε-TEX primitive \scantokens for that purpose.

\filenote A macro for the standard note is provided, \filenote, that expands to "This file has version number ⟨*version number*⟩ dated ⟨*date*⟩." To place such a note in the document's
\thfileinfo title (or heading, with \DocInclude at the default settings), there's \thfileinfo macro that puts \fileinfo in \thanks.

Since \noindent didn't want to cooperate with my code and narration layers some-
\gmdnoindent times, I provide \gmdnoindent that forces a not indented paragraph if \noindent could not.

If you declare the code delimiter other than % and then want % back, you may write
\CDPerc \CDPerc instead of \CodeDelim*\%.
\CDAnd If you like & as the code delimiter (as I did twice), you may write \CDAnd instead of \CodeDelim\&.

\CS To get 'cs' which is 'CS' in small caps (in \acro to be precise), you can write \CS. This macro is \protected so you can use it safely in \changes e.g. Moreover, it checks whether the next token is a letter and puts a space if so so you don't have to bother about \CS\␣.

To enumerate the list of command's arguments or macro's parameters there is the
enumargs enumargs environment which is a version of enumerate with labels like #7. You can
\mand use \item or, at your option, \mand which is just an alias for the former. For an optional
\opt arguments use \opt which wraps the item label in square brackets. Moreover, to align
enumargs* optional and mandatory arguments digit under digit, use the enumargs* environment.

Both environments take an optional argument which is the number of #s. It's 1 by default, but also can be 2 or 4 (other numbers will typeset numbers without a #). Please feel free to notify me if you really need more hashes in that environment.

For an example driver file see chapter The driver.

A queerness of \label

You should be loyally informed that \label in gmdoc behaves slightly non-standard in the \DocInput/Included files: the automatic redefinitions of \ref at each code line are *global* (since the code is typeset in groups and the \refs will be out of those groups), so a \reference in the narrative will point at the last code line not the last section, *unlike* in the standard LATEX.

doc-compatibility

One of my goals while writing gmdoc was to make compilation of doc-like files with gmdoc possible. I cannot guarantee the goal has been reached but I *did* compile doc.dtx with not a smallest change of that file (actually, there was a tiny little buggie in line 3299 which I fixed remotely with \AfterMacrocode tool written specially for that). So, if you wish to compile a doc-like file with my humble package, just try.

\AfterMacrocode \AfterMacrocode{⟨*mc number*⟩}{⟨*the stuff*⟩} defines control sequence \gmd@mchook⟨*mc*

number⟩ with the meaning ⟨*the stuff*⟩ which is put at the end of `macrocode` and `oldmc` number ⟨*mc number*⟩ (after the group).

The doc commands most important in my opinion are supported by gmdoc. Some commands, mostly the obsolete in my opinion, are not supported but give an info on the terminal and in .log.

I assume that if one wishes to use doc's interface then she won't use gmdoc's options but just the default. (Some gmdoc options may interfere with some doc commands, they may cancel them e.g.)

\OldDocInput
\DocInclude
\olddocIncludes
macrocode

The main input commands compatible with doc are `\OldDocInput` and `\DocInclude`, the latter however only in the `\olddocIncludes` declaration's scope.

Within their scope/argument the `macrocode` environments behave as in doc, i.e. they are a kind of verbatim and require to be ended with `%␣␣␣␣\end{macrocode(*)}`.

The default behaviour of `macrocode(*)` with the 'new' input commands is different however. Remember that in the 'new' fashion the code and narration layers philosophy is in force and that is sustained within `macrocode(*)`. Which means basically that with 'new' settings when you write

```
% \begin{macrocode}
  \alittlemacro % change it to \blaargh
%\end{macrocode}
```

and `\blaargh`'s definition is `{foo}`, you'll get

```
\alittlemacro␣% change it to foo
```

(Note that 'my' `macrocode` doesn't require the magical `%␣␣␣␣\end`.)

oldmc

If you are used to the traditional (doc's) `macrocode` and still wish to use gmdoc new way, you have at least two options: there is the `oldmc` environment analogous to the traditional (doc's) `macrocode` (it also has the starred version), that's the first option (I needed the traditional behaviour once in this documentation, find out where & why).

\OldMacrocodes

The other is to write `\OldMacrocodes`. That declaration (OCSR) redefines `macrocode` and `macrocode*` to behave the traditional way. (It's always executed by `\OldDocInput` and `\olddocIncludes`.)

For a more detailed discussion of what is doc-compatible and how, see the code section doc-compatibiliy.

1837 ⟨*package⟩

The driver part

In case of a single package, such as gmutils, a driver part of the package may look as follows and you put it before `\ProvidesPackage/Class`.

```
% \skiplines we skip the driver
\ifnum\catcode`\@=12

\documentclass[outeroff, pagella, fontspec=quiet]{gmdocc}
\usepackage{eufrak}% for |\continuum| in the commentary.
\twocoltoc
\begin{document}

\DocInput{\jobname.sty}
\PrintChanges
\thispagestyle{empty}
\typeout{%
  Produce change log with^^J%
```

```
    makeindex -r -s gmglo.ist -o \jobname.gls \jobname.glo^^J
    (gmglo.ist should be put into some texmf/makeindex
       directory.)^^J}
  \typeout{%
    Produce index with^^J%
    makeindex -r \jobname^^J}
  \afterfi{\end{document}}

  \fi% of driver pass
  %\endskiplines
```

\skiplines \endskiplines

The advantage of `\skiplines`…`\endskiplines` over `\iffalse`…`\fi` is that the latter has to contain balanced `\if`s and `\fi`s while the former hasn't because it sanitizes the stuff. More precisely, it uses the `\dospecials` list, so it sanitizes also the braces.

Moreover, when the `countalllines(*)` option is in force, `\skipfiles`…`\endskipfiles` keeps the score of skipped lines.

Note `%\iffalse` … `%\fi` in the code layer that protects the driver against being typeset.

But gmdoc is more baroque and we want to see the driver typeset—behold.

```
\ifnum\catcode`\@=12

\documentclass[countalllines,␣codespacesgrey,␣outeroff,␣debug,␣
    mwrep,
pagella,␣fontspec=quiet]{gmdocc}

\twocoltoc
\title{The␣\pk{gmdoc}␣Package\\␣i.e.,␣\pk{gmdoc.sty}␣and
  \pk{gmdocc.cls}}
\author{Grzegorz␣`Natror'␣Murzynowski}
\date{\ifcase\month\relax\or␣January\or␣February\or␣March\or␣
    April\or␣May\or
  June\or␣July\or␣August\or␣September\or␣October\or␣November\or
  December\fi\␣2008}

%\includeonly{gmoldcomm}

\begin{document}

\maketitle

\setcounter{page}{2}% hyperref cries if it sees two pages numbered 1.
\tableofcontents
\DoIndex\maketitle

\SelfInclude
\DocInclude{gmdocc}
```

For your convenience I decided to add the documentations of the three auxiliary packages:

```
\skipgmlonely[\stanza␣The␣remarks␣about␣installation␣and␣
    compiling
  of␣the␣documentation␣are␣analogous␣to␣those␣in␣the␣chapter
  \pk{gmdoc.sty}␣and␣therefore␣ommitted.\stanza]
\DocInclude{gmutils}
\DocInclude{gmiflink}
\DocInclude{gmverb}
\DocInclude{gmeometric}
\DocInclude{gmoldcomm}
```

```
\typeout{%
  Produce␣change␣log␣with^^J%
  makeindex␣-r␣-s␣gmglo.ist␣-o␣\jobname.gls␣\jobname.glo^^J
  (gmglo.ist␣should␣be␣put␣into␣some␣texmf/makeindex␣
       directory.)^^J}
\PrintChanges
\typeout{%
  Produce␣index␣with^^J%
  makeindex␣-r␣\jobname^^J}
 \PrintIndex

\afterfi{%
\end{document}
```

MakeIndex shell commands:

```
  makeindex␣-r␣gmdoc
  makeindex␣-r␣-s␣gmglo.ist␣-o␣gmdocDoc.gls␣gmdocDoc.glo
```

(gmglo.ist should be put into some texmf/makeindex directory.)

And "That's all, folks" ;-) .

```
}\fi% of \ifnum\catcode`\@=12, of the driver that is.
```

The code

For debug

```
\catcode`\^^C=9\relax
```

We set the `\catcode` of this char to $_{13}$ in the comment layer.

The basic idea of this package is to re`\catcode` `^^M` (the line end char) and % (or any other comment char) so that they start and finish typesetting of what's between them as the TEX code i.e., verbatim and with the bells and whistles.

The bells and whistles are (optional) numbering of the codelines, and automatic indexing the cses, possibly with special format for the 'def' and 'usage' entries.

As mentioned in the preface, this package aims at a minimal markup of the working code. A package author writes his splendid code and adds a brilliant comment in %ed lines and that's all. Of course, if she wants tomake a `\section` or `\emphasise`, he has to type respective cses.

I see the feature described above to be quite a convenience, however it has some price. See section Life among queer EOLs for details, here I state only that in my opinion the price is not very high.

More detailedly, the idea is to make `^^M` (end of line char) active and to define it to check if the next char i.e., the beginnig of the next line is a % and if so to gobble it and just continue usual typesetting or else to start a verbatim scope. In fact, every such a line end starts a verbatim scope which is immediately closed, if the next line begins with (leading spaces and) the code delimiter.

Further details are typographical parameters of verbatim scope and how to restore normal settings after such a scope so that a code line could be commented and still displayed, how to deal with leading spaces, how to allow breaking a moving argument in two lines in the comment layer, how to index and marginpar macros etc.

The package options

```
\RequirePackage{gmutils}[2008/08/30]% includes redefinition of \newif to make the switches \protected.
\RequirePackage{xkeyval}% we need key-vals later, but maybe we'll make the option key-val as well.
```

Maybe someone wants the code lines not to be numbered.

\if@linesnotnum
```
\newif\if@linesnotnum
```

linesnotnum
```
\DeclareOption{linesnotnum}{\@linesnotnumtrue}
```

And maybe he or she wishes to declare resetting the line counter along with some sectioning counter him/herself.

\if@uresetlinecount
```
\newif\if@uresetlinecount
```

uresetlinecount
```
\DeclareOption{uresetlinecount}{\@uresetlinecounttrue}
```

And let the user be given a possibility to count the comment lines.

\if@countalllines
```
\newif\if@countalllines
```
\if@printalllinenos
```
\newif\if@printalllinenos
```

countalllines
```
\DeclareOption{countalllines}{%
  \@countalllinestrue
  \@printalllinenosfalse}
```

countalllines*
```
\DeclareOption{countalllines*}{%
  \@countalllinestrue
  \@printalllinenostrue}
```

Unlike in doc, indexing the macros is the default and the default reference is the code line number.

\if@noindex
```
\newif\if@noindex
```

noindex
```
\DeclareOption{noindex}{\@noindextrue}
```

\if@pageindex
```
\newif\if@pageindex
```

pageindex
```
\DeclareOption{pageindex}{\@pageindextrue}
```

It would be a great honour to me if someone would like to document LaTeX source with this humble package but I don't think it's really probable so let's make an option that'll switch index exclude list properly (see sec. Index exclude list).

\if@indexallmacros
```
\newif\if@indexallmacros
```

indexallmacros
```
\DeclareOption{indexallmacros}{\@indexallmacrostrue}
```

Some document classes don't support marginpars or disable them by default (as my favourite Marcin Woliński's classes).

\if@marginparsused
```
\@ifundefined{if@marginparsused}{\newif\if@marginparsused}{}
```

This switch is copied from mwbk.cls for compatibility with it. Thanks to it loading an mwcls with `[withmarginpar]` option shall switch marginpars on in this package, too.

To be compatible with the standard classes, let's `\let`:

```
\@ifclassloaded{article}{\@marginparsusedtrue}{}
\@ifclassloaded{report}{\@marginparsusedtrue}{}
\@ifclassloaded{book}{\@marginparsusedtrue}{}
```

And if you don't use mwcls nor standard classes, then you have the options:

withmarginpar
```
\DeclareOption{withmarginpar}{\@marginparsusedtrue}
```

nomarginpar
```
\DeclareOption{nomarginpar}{\@marginparsusedfalse}
```

The order of the above conditional switches and options is significant. Thanks to it the options are available also in the standard classes and in mwcls.

To make the code spaces blank (they are visible by default except the leading ones).

codespacesblank
```
\DeclareOption{codespacesblank}{%
  \AtEndOfPackage{% to allow codespacesgrey, codespacesblank
  \AtBeginDocument{\CodeSpacesBlank}}}
```

codespacesgrey
```
\DeclareOption{codespacesgrey}{%
  \AtEndOfPackage{% to put the declaration into the begin-document hook after
       definition of \visiblespace.
    \AtBeginDocument{\CodeSpacesGrey}}}
\ProcessOptions
```

The dependencies and preliminaries

We require another package of mine that provides some tricky macros analogous to the LaTeX standard ones, such as `\newgif` and `\@ifnextcat`. Since 2008/08/08 it also makes `\if...` switches `\protected` (redefines `\newif`)

```
\RequirePackage{gmutils}[2008/08/08]
```

A standard package for defining colours,

```
\RequirePackage{xcolor}
```

and a colour definition for the hyperlinks not to be too bright

```
\definecolor{deepblue}{rgb}{0,0,.85}
```

And the standard package probably most important for gmdoc: If the user doesn't load hyperref with her favourite options, we do, with *ours*. If he has done it, we change only the links' colour.

```
\@ifpackageloaded{hyperref}{\hypersetup{colorlinks=true,
    linkcolor=deepblue, urlcolor=blue, filecolor=blue}}{%
  \RequirePackage[colorlinks=true, linkcolor=deepblue,
       urlcolor=blue,
  filecolor=blue, pdfstartview=FitH, pdfview=FitBH,
  pdfpagemode=UseNone]{hyperref}}
```

Now a little addition to hyperref, a conditional hyperlinking possibility with the `\gmhypertarget` and `\gmiflink` macros. It *has* to be loaded *after* hyperref.

```
\RequirePackage{gmiflink}
```

And a slight redefinition of `verbatim`, `\verb(*)` and providing of `\MakeShortVerb(*)`.

```
\RequirePackage{gmverb}[2008/08/20]
```

```
\if@noindex
  \AtBeginDocument{\gag@index}% for the latter macro see line 4925.
\else
   \RequirePackage{makeidx}\makeindex
\fi
```

Now, a crucial statement about the code delimiter in the input file. Providing a special declaration for the assignment is intended for documenting the packages that play with %'s `\catcode`. Some macros for such plays are defined further.

The declaration comes in the starred and unstarred version. The unstarred version besides declaring the code delimiter declares the same char as the verb(atim) 'hyphen'.

The starred version doesn't change the verb 'hyphen'. That is intended for the special tricks e.g. for the `oldmc` environment.

If you want to change the verb 'hyphen', there is the `\VerbHyphen\`⟨*one char*⟩ declaration provided by gmverb.

\CodeDelim
```
\def\CodeDelim{\@ifstar\Code@Delim@St\Code@Delim}
```
\Code@Delim
```
\def\Code@Delim#1{%
  {\escapechar\m@ne
    \@xa\gdef\@xa\code@delim\@xa{\string#1}}}
```
(`\@xa` is `\expandafter`, see gmutils.)

\Code@Delim@St
```
\def\Code@Delim@St#1{\Code@Delim{#1}\VerbHyphen{#1}}
```
It is an invariant of gmdocing that `\code@delim` stores the current code delimiter (of catcode 12).

The `\code@delim` should be $_{12}$ so a space is not allowed as a code delimiter. I don't think it *really* to be a limitation.

And let's assume you do as we all do:
```
\CodeDelim*\%
```
We'll play with `\everypar`, a bit, and if you use such things as the `{itemize}` environment, an error would occur if we didn't store the previous value of `\everypar` and didn't restore it at return to the narration. So let's assign a `\toks` list to store the original `\everypar`:

\gmd@preverypar
```
\newtoks\gmd@preverypar
```
\settexcodehangi
```
\newcommand*\settexcodehangi{%
  \hangindent=\verbatimhangindent␣\hangafter=\@ne}%
```
we'll use it in the inline comment case. `\verbatimhangindent` is provided by the gmverb package and $= 3$ em by default.
```
\@ifdefinable\@@settexcodehangi{\let\@@settexcodehangi=%
    \settexcodehangi}
```
We'll play a bit with `\leftskip`, so let the user have a parameter instead. For normal text (i.e. the comment):

\TextIndent
```
\newlength\TextIndent
```
I assume it's originally equal to `\leftskip`, i.e. `\z@`. And for the TEX code:
```
\newlength\CodeIndent
```
\CodeIndent
```
\CodeIndent=1,5em\relax
```
And the vertical space to be inserted where there are blank lines in the source code:
```
\@ifundefined{stanzaskip}{\newlength\stanzaskip}{}
```
I use `\stanzaskip` in gmverse package and derivatives for typesetting poetry. A computer program code *is* poetry.

\stanzaskip
```
\stanzaskip=\medskipamount
```
```
\advance\stanzaskip␣by-.25\medskipamount%
```
to preserve the stretch- and shrinkability.

A vertical space between the commentary and the code seems to enhance readability so declare
```
\newskip\CodeTopsep
\newskip\MacroTopsep
```

And let's set them. For æsthetic minimality[7] let's unify them and the other most important vertical spaces used in gmdoc. I think a macro that gathers all these assignments may be handy.

\UniformSkips
\CodeTopsep
\MacroTopsep

```
\def\UniformSkips{%
  \CodeTopsep=\stanzaskip
  \MacroTopsep=\stanzaskip
  \abovedisplayskip=\stanzaskip
%% \abovedisplayshortskip remains untouched as it is 0.0 pt plus 3.0 pt by default.
  \belowdisplayskip=\stanzaskip
  \belowdisplayshortskip=.5\stanzaskip% due to DEK's idea of making the
      short below display skip half of the normal.
  \advance\belowdisplayshortskip by\smallskipamount
  \advance\belowdisplayshortskip by-1\smallskipamount% We advance \be-
      % lowdisplayshortskip forth and back to give it the \smallskipamount's
      shrink- and stretchability components.
  \topsep=\stanzaskip
  \partopsep=\z@
}
```

We make it the default,

```
\UniformSkips
```

but we allow you to change the benchmark glue i.e., `\stanzaskip` in the preamble and still have the other glues set due to it: we launch `\UniformSkips` again after the preamble.

```
\AtBeginDocument{\UniformSkips}
```

So, if you don't want them at all i.e., you don't want to set other glues due to `\stanzaskip`, you should use the following declaration. That shall discard the unwanted setting already placed in the `\begin{document}` hook.

\NonUniformSkips

```
\newcommand*\NonUniformSkips{\@relaxen\UniformSkips}
```

Why do we launch `\UniformSkips` twice then? The first time is to set all the gmdoc-specific glues *somehow*, which allows you to set not all of them, and the second time to set them due to a possible change of `\stanzaskip`.

And let's define a macro to insert a space for a chunk of documentation, e.g., to mark the beginning of new macro's explanation and code.

\chunkskip

```
\newcommand*\chunkskip{%
  \par\addvspace{%
  \glueexpr\MacroTopsep
  \if@codeskipput-\CodeTopsep\fi
  \relax
}\@codeskipputgtrue}
```

And, for a smaller part of text,

\stanza

```
\pdef\stanza{%
  \par\addvspace{%
    \glueexpr\stanzaskip
    \if@codeskipput-\CodeTopsep\fi
```

[7] The terms 'minimal' and 'minimalist' used in gmdoc are among others inspired by the *South Park* cartoon's episode *Mr. Hankey The Christmas (…)* in which 'Philip Glass, a Minimalist New York composer' appears in a 'non-denominational non-offensive Christmas play' ;-). (Philip Glass composed the music to the *Qatsi* trilogy among others).

```
2326      \relax}\@codeskipputgtrue}
```

Since the stanza skips are inserted automatically most often (cf. lines 2741, 3168, 2761, 3049, 3221), sometimes you may need to forbid them.

\nostanza
```
2331 \newcommand*\nostanza{%
2333   \par
2334   \if@codeskipput\unless\if@nostanza\vskip-\CodeTopsep\relax\fi%
           \fi
2335   \@codeskipputgtrue\@nostanzagtrue
2336   \@afternarrgfalse\@aftercodegtrue}%
```
In the 'code to narration' case the first switch is enough but in the countercase 'narration to code' both the second and third are necessary while the first is not.

To count the lines where they have begun not before them
```
2343 \newgif\if@newline
```

`\newgif` is `\newif` with global effect i.e., it defines `\...gtrue` and `\...gfalse` switchers that switch respective Boolean switch *globally*. See gmutils package for details.

To handle the DocStrip directives not *any* `%<....`

\if@dsdir
```
2351 \newgif\if@dsdir
```

This switch will be falsified at the first char of a code line. (We need a switch independent of the one indicationg whether the line has or has not been counted because of two reasons: 1. line numbering is optional, 2. counting the line falsifies that switch *before* the first char.)

The core

Now we define main `\inputing` command that'll change catcodes. The macros used by it are defined later.

\DocInput
```
2364 \newcommand*\DocInput{\bgroup\@makeother\_\Doc@Input}

2366 \begingroup\catcode`\^^M=\active%
2367 \firstofone{\endgroup%
```
\Doc@Input
```
2368   \newcommand*{\Doc@Input}[1]{\egroup\begingroup%
2371     \edef\gmd@inputname{#1}%
```
we'll use it in some notifications.
```
2373     \let\gmd@currentlabel@before=\@currentlabel%
```
we store it because we'll do `\xdefs` of `\@currentlabel` to make proper references to the line numbers so we want to restore current `\@currentlabel` after our group.
```
2378     \gmd@setclubpenalty%
```
we wrapped the assignment of `\clubpenalty` in a macro because we'll repeat it twice more.
```
2380     \@clubpenalty\clubpenalty␣\widowpenalty=3333␣%
```
Most paragraphs of the code will be one-line most probably and many of the narration, too.
```
2385     \tolerance=1000␣%
```
as in doc.
```
2388     \@xa\@makeother\csname\code@delim\endcsname%
2390     \gmd@resetlinecount%
```
due to the option `uresetlinecount` we reset the linenumber counter or do nothing.

^^M
```
2393     \QueerEOL%
```
It has to be before the begin-input-hook to allow change by that hook.
```
2398     \@beginputhook%
```
my first use of it is to redefine `\maketitle` just at this point not globally.
```
2400     \everypar=\@xa{\@xa\@codetonarrskip\the\everypar}%
```
\gmd@guardedinput
```
2402     \edef\gmd@guardedinput{%
```

```
2403        \@nx\@@input␣#1\relax% \@nx is \noexpand, see gmutils. \@@input is the
                true TeX's \input.
2407        \gmd@iihook% cf. line 6935
2408        \@nx\EOFMark% to pretty finish the input, see line 2568.
2410        \@nx\CodeDelim\@xa\@nx\csname\code@delim\endcsname% to ensure the
                code delimiter is the same as at the beginning of input.
2415        \@nx^^M\code@delim%
2417      }% we add guardians after \inputing a file; somehow an error occurred without
              them.
2419      \catcode`\%=9␣% for doc-compatibility.
2420      \setcounter{CheckSum}{0}% we initialize the counter for the number of the
              escape chars (the assignment is \global).
2422      \everyeof{\relax}% \@nx moved not to spoil input of toc e.g.
2423      \@xa\@xa\@xa^^M\gmd@guardedinput%
2424      \par%
2426      \@endinputhook% It's a hook to let postpone some stuff till the end of input.
              We use it e.g. for the doc-(not)likeliness notifications.
2429      \glet\@currentlabel=\gmd@currentlabel@before% we restore value from
              before this group. In a very special case this could cause unexpected be-
              haviour of crossrefs, but anyway we acted globally and so acts hyperref.
2433      \endgroup%
2434    }% end of \Doc@Input's definition.
2435  }% end of \firstofone's argument.
```

So, having the main macro outlined, let's fill in the details.

First, define the queer EOL. We define a macro that `^^M` will be let to. `\gmd@textEOL` will be used also for checking the `%^^M` case (`\@ifnextchar` does `\ifx`).

`\gmd@textEOL`

```
2445  \pdef\gmd@textEOL{␣% a space just like in normal TeX. We put it first to cooperate
          with \^^M's \expandafter\ignorespaces. It's no problem since a space ␣10
          doesn't drive TeX out of the vmode.
2449    \ifhmode\@afternarrgtrue\@codeskipputgfalse\fi% being in the horizon-
            tal mode means we've just typeset some narration so we turn the respec-
            tive switches: the one bringing the message 'we are after narration' to
            True (@afternarr) and the 'we have put the code-narration glue' to False
            (@codeskipput). Since we are in a verbatim group and the information
            should be brought outside it, we switch the switches globally (the letter g in
            both).
2456    \@newlinegtrue% to \refstep the lines' counter at the proper point.
2458    \@dsdirgtrue% to handle the DocStrip directives.
2459    \@xa\@trimandstore\the\everypar\@trimandstore% we store the previous
            value of \everypar register to restore it at a proper point. See line 3257 for
            the details.
2462    \begingroup%
2468    \gmd@setclubpenalty% Most paragraphs will be one-line most probably. Since
            some sectioning commands may change \clubpenalty, we set it again here
            and also after this group.
2472    \aftergroup\gmd@setclubpenalty%
2473    \let\par\@@par% inside the verbatim group we wish \par to be genuine.
2475    \ttverbatim% it does \tt and makes specials other or \active-and-breakable.
2477    \gmd@DoTeXCodeSpace%
2478    \@makeother\|% because \ttverbatim doesn't do that.
2479    \MakePrivateLetters% see line 3518.
```

```
2480    \@xa\@makeother\code@delim% we are almost sure the code comment char is
            among the chars having been 12ed already. For 'almost' see the \IndexInput
            macro's definition.
```

So, we've opened a verbatim group and want to peek at the next character. If it's %, then we just continue narration, else we process the leading spaces supposed there are any and, if after them is a %, we just continue the commentary as in the previous case or else we typeset the TEX code.

```
2489    \@xa\@ifnextchar\@xa{\code@delim}{%
2491      \gmd@continuenarration}{%
2492      \gmd@dolspaces% it will launch \gmd@typesettexcode.
2493    }% end of \@ifnextchar's else.
2494  }% end of \gmd@textEOL's definition.
```

\gmd@setclubpenalty
```
2496  \def\gmd@setclubpenalty{\clubpenalty=3333␣}
```

For convenient adding things to the begin- and endinput hooks:

\AtEndInput
\@endinputhook
```
2500  \def\AtEndInput{\g@addto@macro\@endinputhook}
2501  \def\@endinputhook{}
```

Simili modo

\AtBegInput
\@beginputhook
```
2504  \def\AtBegInput{\g@addto@macro\@beginputhook}
2505  \def\@beginputhook{}
```

For the index input hooking now declare a macro, we define it another way at line 6935.

```
2509  \emptify\gmd@iihook
```

And let's use it instantly to avoid a disaster while reading in the table of contents.

\tableofcontents
```
2514  \AtBegInput{\let\gmd@@toc\tableofcontents
2515    \def\tableofcontents{%
2516      \@ifQueerEOL{\StraightEOL\gmd@@toc\QueerEOL}%
2517      {\gmd@@toc}}}
```

As you'll learn from lines 3353 and 3340, we use those two strange declarations to change and restore the very special meaning of the line end. Without such changes \tableofcontents would cause a disaster (it did indeed). And to check the catcode of ^^M is the rôle of \@ifEOLactive:

\@ifEOLactive
```
2529  \long\def\@ifEOLactive#1#2{%
2530    \ifnum\catcode`\^^M=\active␣\afterfi{#1}\else\afterfi{#2}\fi}
```

\@ifQueerEOL
```
2532  \foone\obeylines{%
2533    \long\def\@ifQueerEOL#1#2{%
2534      \@ifEOLactive{\ifx^^M\gmd@textEOL\afterfi{#1}\else\afterfi{%
            #2}\fi}%
2535      {#2}}% of \@ifQueerEOL
2536  }% of \foone
```

The declaration below is useful if you wish to put sth. just in the nearest input/included file and no else: at the moment of putting the stuff it will erase it from the hook. You may declare several \AtBegInputOnces, they add up.

\gmd@ABIOnce
```
2547  \@emptify\gmd@ABIOnce
2548  \AtBegInput\gmd@ABIOnce
```

\AtBegInputOnce
```
2550  \long\def\AtBegInputOnce#1{%
2563    \gaddtomacro\gmd@ABIOnce{\g@emptify\gmd@ABIOnce#1}}
```

Many tries of finishing the input cleanly led me to setting the guardians as in line 2415 and to

\EOFMark 2568 `\def\EOFMark{\<eof>}`

Other solutions did print the last code delimiter or would require managing a special case for the macros typesetting TEX code to suppress the last line's numbering etc.

If you don't like it, see line 7730.

Due to the `codespacesblank` option in the line **??** we launch the macro defined below to change the meaning of a gmdoc-kernel macro.

```
2580 \begin{obeyspaces}%
2581 \gdef\CodeSpacesVisible{%
```
\gmd@DoTeXCodeSpace 2582 `\def\gmd@DoTeXCodeSpace{%`
```
2583 \obeyspaces\let␣=\breakablevisspace}}%
```
\CodeSpacesBlank 2590 `\gdef\CodeSpacesBlank{%`
```
2591 \let\gmd@DoTeXCodeSpace\gmobeyspaces%
2592 \let\gmd@texcodespace=\␣}% the latter \let is for the \if...s.
```
\CodeSpacesSmall 2595 `\gdef\CodeSpacesSmall{%`
\gmd@DoTeXCodeSpace 2596 `\def\gmd@DoTeXCodeSpace{%`
```
2597 \obeyspaces\def␣{\,\hskip\z@}}%
```
\gmd@texcodespace 2598 `\def\gmd@texcodespace{\,\hskip\z@}}%`
```
2600 \end{obeyspaces}
```
\CodeSpacesGrey 2602 `\def\CodeSpacesGrey{%`
```
2605   \CodeSpacesVisible
2606   \VisSpacesGrey% defined in gmverb
2607 }%
```

Note that `\CodeSpacesVisible` doesn't revert `\CodeSpacesGrey`.

```
2612 \CodeSpacesVisible
```

How the continuing of the narration should look like?

\gmd@continuenarration 2616 `\def\gmd@continuenarration{%`
```
2617   \endgroup
2618   \gmd@cpnarrline% see below.
2619   \@xa\@trimandstore\the\everypar\@trimandstore
2620   \everypar=\@xa{\@xa\@codetonarrskip\the\everypar}%
2621   \@xa\gmd@checkifEOL\@gobble}
```

Simple, isn't it? (We gobble the 'other' code delimiter. Despite of `\egroup` it's $_{12}$ because it was touched by `\futurelet` contained in `\@ifnextchar` in line 2489. And in line 2869 it's been read as $_{12}$. That's why it works in spite of that % is of category 'ignored'.)

```
2628 \if@countalllines
```

If the `countalllines` option is in force, we get the count of lines from the `\inputlineno` primitive. But if the option is `countalllines*`, we want to print the line number.

\gmd@countnarrline@ 2638 `\def\gmd@countnarrline@{%`
```
2639     \gmd@grefstep{codelinenum}\@newlinegfalse
2640     \everypar=\@xa{%
2641       \@xa\@codetonarrskip\the\gmd@preverypar}% the \hyperlabel@-
          % line macro puts a hypertarget in a \raise i.e., drives TEX into
          the horizontal mode so \everypar shall be issued. Therefore we
          should restore it.
```

```
}% of \gmd@countnarrline@
\gmd@grefstep \def\gmd@grefstep#1{% instead of diligent redefining all possible commands
    and environments we just assign the current value of the respective TEX's
    primitive to the codelinenum counter. Note we decrease it by −1 to get
    the proper value for the next line. (Well, I don't quite know why, but it
    works.)
  \ifnum\value{#1}<\inputlineno
    \csname␣c@#1\endcsname\numexpr\inputlineno-1\relax
    \ifvmode\leavevmode\fi% this line is added 2008/08/10 after an all-
        night debuggery ;-) that showed that at one point \gmd@grefstep
        was called in vmode which caused adding \penalty 10000 to
        the main vertical list and thus forbidding pagebreak during entire
        % oldmc.
    \grefstepcounter{#1}%
  \fi}% We wrap stepping the counter in an \ifnum to avoid repetition of
      the same ref-value (what would result in the "multiply defined labels"
      warning).
```

The `\grefstepcounter` macro, defined in gmverb, is a global version of `\refstepcounter`, observing the redefinition made to `\refstepcounter` by hyperref.

```
\if@printalllinenos% Note that checking this swich makes only sense when
    countalllines is true.
\gmd@cpnarrline  \def\gmd@cpnarrline{% count and print narration line
    \if@newline
      \gmd@countnarrline@
      \hyperlabel@line
      {\LineNumFont\thecodelinenum}\,\ignorespaces}%
    \fi}
  \else% not printalllinenos
    \emptify\gmd@cpnarrline
  \fi
\gmd@ctallsetup \def\gmd@ctallsetup{% In the oldmc environments and with the \FileInfo de-
    claration (when countalllines option is in force) the code is gobbled
    as an argument of a macro and then processed at one place (at the end
    of oldmc e.g.) so if we used \inputlineno, we would have got all the
    lines with the same number. But we only set the counter not \refstep
    it to avoid putting a hypertarget.
  \setcounter{codelinenum}{\inputlineno}% it's global.
  \let\gmd@grefstep\hgrefstepcounter}
\else% not countallines (and therefore we won't print the narration lines' num-
    bers either)
  \@emptify\gmd@cpnarrline
  \let\gmd@grefstep\hgrefstepcounter% if we don't want to count all the lines,
      we only \ref-increase the counter in the code layer.
  \emptify\gmd@ctallsetup
\fi% of \if@countalllines
\skiplines \def\skiplines{\bgroup
  \let\do\@makeother␣\dospecials␣% not \@sanitize because the latter
      doesn't recatcode braces and we want all to be quieten.
  \gmd@skiplines}
  \edef\gmu@tempa{%
```

```
2713      \long\def\@nx\gmd@skiplines##1\bslash␣endskiplines{\egroup}}
2714    \gmu@tempa
```

And typesetting the TEX code?

```
2718 \foone\obeylines{%
\gmd@typesettexcode 2719   \def\gmd@typesettexcode{%
2720     \gmd@parfixclosingspace% it's to eat a space closing the paragraph, see below. It contains \par.
```

A verbatim group has already been opened by `\ttverbatim` and additional `\catcode`.

```
2727     \everypar={\@@settexcodehangi}% At first attempt we thought of giving the user a \toks list to insert at the beginning of every code line, but what for?
      ^^M 2731     \def^^M{% TEX code EOL
\@newlinegtrue 2732       \@newlinegtrue% to \refstep the counter in proper place.
2733       \@dsdirgtrue% to handle the DocStrip directives.
2734       \global\gmd@closingspacewd=\z@% we don't wish to eat a closing space after a codeline, because there isn't any and a negative rigid \hskip added to \parfillskip would produce a blank line.
2738       \ifhmode\par\@codeskipputgfalse\else%
2739         \if@codeskipput%
2740         \else\addvspace{\stanzaskip}\@codeskipputgtrue%
2741         \fi% if we've just met a blank (code) line, we insert a \stanzaskip glue.
2744       \fi%
2745       \prevhmodegfalse% we want to know later that now we are in the vmode.
2748       \@ifnextchar{\gmd@texcodespace}{%
2749         \@dsdirgfalse\gmd@dolspaces}{\gmd@charbychar}%
2750     }% end of ^^M's definition.
2752     \let\gmd@texcodeEOL=^^M% for further checks inside \gmd@charbychar.
2753     \raggedright\leftskip=\CodeIndent%
2754     \if@aftercode%
2755       \gmd@nocodeskip1{iaC}%
2756     \else%
2757       \if@afternarr%
2759         \if@codeskipput\else%
2760           \gmd@codeskip1\@aftercodegfalse%
2761         \fi%
2762       \else\gmd@nocodeskip1{naN}%
2763       \fi%
2764     \fi% if now we are switching from the narration into the code, we insert a proper vertical space.
2767     \@aftercodegtrue\@afternarrgfalse%
2769     \ifdim\gmd@ldspaceswd>\z@% and here the leading spaces.
2770       \leavevmode\@dsdirgfalse%
2771       \if@newline\gmd@grefstep{codelinenum}\@newlinegfalse%
2772       \fi%
2773       \printlinenumber% if we don't want the lines to be numbered, the respective option \lets this cs to \relax.
2775       \hyperlabel@line%
2777       \mark@envir% index and/or marginize an environment if there is some to be done so, see line 4815.
2779       \hskip\gmd@ldspaceswd%
```

```
2780        \advance\hangindent␣by\gmd@ldspaceswd%
2781        \xdef\settexcodehangi{%
2782          \@nx\hangindent=\the\hangindent% and also set the hanging indent
                setting for the same line comment case. BTW., this % or rather lack of
                it costed me five hours of debugging and rewriting. Active lineends
                require extreme caution.
2787          \@nx\hangafter=1\space}%
2788      \else%
2789        \glet\settexcodehangi=\@@settexcodehangi%
              % \printlinenumber here produced line numbers for blank lines
              which is what we don't want.
2792      \fi% of \ifdim
2793      \gmd@ldspaceswd=\z@%
2794      \prevhmodegfalse% we have done \par so we are not in the hmode.
2796      \@aftercodegtrue% we want to know later that now we are typesetting a code-
              line.
2798      \if@ilgroup\aftergroup\egroup\@ilgroupfalse\fi% when we are in the
              inline comment group (for ragged right or justified), we want to close it.
              But if we did it here, we would close the verbatim group for the code. But
              we set the swich false not to repeat \aftergroup\egroup.
2805      \gmd@charbychar% we'll eat the code char by char to scan all the macros and
              thus to deal properly with the case \% in which the % will be scanned and
              won't launch closing of the verbatim group.
2809    }% of \gmd@typesettexcode.
2810  }% of \foone\obeylines.
```

Now let's deal with the leading spaces once forever. We wish not to typeset ␣s but to add the width of every leading space to the paragraph's indent and to the hanging indent, but only if there'll be any code character not being % in this line (e.g., the end of line). If there'll be only %, we want just to continue the comment or start a new one. (We don't have to worry about whether we should \par or not.)

\gmd@spacewd
```
2822  \newlength\gmd@spacewd% to store the width of a (leading) ␣12.
```
\gmd@ldspaceswd
```
2825  \newlength\gmd@ldspaceswd% to store total length of gobbled leading spaces.
```

It costed me some time to reach that in my verbatim scope a space isn't ␣12 but ␣13, namely \let to \breakablevisspace. So let us \let for future:

\gmd@texcodespace
```
2833  \let\gmd@texcodespace=\breakablevisspace
```

And now let's try to deal with those spaces.

\gmd@dolspaces
```
2836  \def\gmd@dolspaces{%
2837    \ifx\gmd@texcodespace\@let@token
2838      \@dsdirgfalse
2839      \afterfi{\settowidth{\gmd@spacewd}{\visiblespace}%
2840      \gmd@ldspaceswd=\z@
2841      \gmd@eatlspace}%
2842    \else\afterfi{% about this smart macro and other of its family see gmutils sec. 3.
2848      \if@afternarr\if@aftercode
2849          \ifilrr\bgroup␣\gmd@setilrr\fi
2850      \fi\fi
2851      \par% possibly after narration
2852      \if@afternarr\if@aftercode
2853          \ifilrr\egroup\fi
2854      \fi\fi
2855      \gmd@typesettexcode}%
```

```
  \fi}
```

And now, the iterating inner macro that'll eat the leading spaces.

\gmd@eatlspace
```
\def\gmd@eatlspace#1{%
  \ifx\gmd@texcodespace#1%
    \advance\gmd@ldspaceswd␣by\gmd@spacewd% we don't \advance
        it \globally because the current group may be closed iff we meet % and
        then we'll won't indent the line anyway.
    \afteriffifi\gmd@eatlspace
  \else
    \if\code@delim\@nx#1%
      \gmd@ldspaceswd=\z@
      \afterfifi{\gmd@continuenarration#1}%
    \else␣\afterfifi{\gmd@typesettexcode#1}%
    \fi
  \fi}%
```

We want to know whether we were in hmode before reading current `\code@delim`. We'll need to switch the switch globally.

```
\newgif\ifprevhmode
```

And the main iterating inner macro which eats every single char of verbatim text to check the end. The case \% should be excluded and it is indeed.

\gmd@charbychar
```
\newcommand*\gmd@charbychar[1]{%
  \ifhmode\prevhmodegtrue
  \else\prevhmodegfalse
  \fi
  \if\code@delim\@nx#1%
    \def\next{% occurs when next a \hskip4.875pt is to be put
      \gmd@percenthack% to typeset % if a comment continues the codeline.
    \endgroup%
    \gmd@checkifEOLmixd}% to see if next is ^^M and then do \par.
  \else% i.e., we've not met the code delimiter
    \ifx\relax#1\def\next{%
      \endgroup}% special case of end of file thanks to \everyeof.
    \else
      \if\code@escape@char\@nx#1%
        \@dsdirgfalse% yes, just here not before the whole \if because then we
            would discard checking for DocStrip directives doable by the active
            % at the 'old macrocode' setting.
        \def\next{%
          \gmd@countheline#1\scan@macro}%
      \else
        \def\next{%
          \gmd@EOLorcharbychar#1}%
      \fi
    \fi
  \fi\next}
```

\debug@special
```
\def\debug@special#1{%
  \ifhmode\special{color␣push␣gray␣0.#1}%
  \else\special{color␣push␣gray␣0.#1000}\fi}
```

One more inner macro because `^^M` in TEX code wants to peek at the next char and possibly launch `\gmd@charbychar`. We deal with counting the lines thorougly. In-

creasing the counter is divided into cases and it's very low level in one case because \refstepcounter and \stepcounter added some stuff that caused blank lines, at least with hyperref package loaded.

\gmd@EOLorcharbychar
```
\def\gmd@EOLorcharbychar#1{%
  \ifx\gmd@texcodeEOL#1%
    \if@newline
      \@newlinegfalse
    \fi
    \afterfi{#1}% here we print #1.
  \else% i.e., #1 is not a (very active) line end,
    \afterfi
    {%
\gmd@countheline#1\gmd@charbychar}% or here we print #1. Here we would
      also possibly mark an environment but there's no need of it because declaring
      an environment to be marked requires a bit of commentary and here we are
      after a code ^^M with no commentary.
 \fi}
```

\gmd@countheline
```
\def\gmd@countheline{%
  \ifvmode
    \if@newline
      \leavevmode
      \gmd@grefstep{codelinenum}\@newlinegfalse
      \hyperlabel@line
    \fi
    \printlinenumber
    \mark@envir
  \else% not vmode
    \if@newline
      \gmd@grefstep{codelinenum}\@newlinegfalse
      \hyperlabel@line
    \fi
  \fi}
```

If before reading current % char we were in horizontal mode, then we wish to print % (or another code delimiter).

\gmd@percenthack
```
\def\gmd@percenthack{%
  \ifprevhmode\code@delim\aftergroup~% We add a space after %, because
      I think it looks better. It's done \aftergroup to make the spaces possible
      after the % not to be typeset.
  \else\aftergroup\gmd@narrcheckifds@ne% remember that \gmd@precent-
      hack is only called when we've the code delimiter and soon we'll close the
      verbatim group and right after \endgroup there waits \gmd@checkifEOLmixd.
  \fi}
```

\gmd@narrcheckifds@ne
```
\def\gmd@narrcheckifds@ne#1{%
  \@dsdirgfalse\@ifnextchar<{%
    \@xa\gmd@docstripdirective\@gobble}{#1}}
```

The macro below is used to look for the %^^M case to make a commented blank line make a new paragraph. Long searched and very simple at last.

\gmd@checkifEOL
```
\def\gmd@checkifEOL{%
  \gmd@cpnarrline
  \everypar=\@xa{\@xa\@codetonarrskip}% we add the macro that'll insert a ver-
      tical space if we leave the code and enter the narration.
```

```
    \the\gmd@preverypar}%
  \@ifnextchar{\gmd@textEOL}{%
    \@dsdirgfalse
    \par\ignorespaces}{%
    \gmd@narrcheckifds}}%
```

We check if it's %<, a DocStrip directive that is.

\gmd@narrcheckifds
```
\def\gmd@narrcheckifds{%
  \@dsdirgfalse\@ifnextchar<{%
    \@xa\gmd@docstripdirective\@gobble}{\ignorespaces}}
```

In the 'mixed' line case it should be a bit more complex, though. On the other hand, there's no need to checking for DocStrip directives.

\gmd@checkifEOLmixd
```
\def\gmd@checkifEOLmixd{%
  \gmd@cpnarrline
  \everypar=\@xa{\@xa\@codetonarrskip\the\gmd@preverypar}%
  \@afternarrgfalse\@aftercodegtrue
  \ifhmode\@codeskipputgfalse\fi
  \@ifnextchar{\gmd@textEOL}{%
    {\raggedright\gmd@endpe\par}% without \raggedright this \par would
        be justified which is not appropriate for a long codeline that should be
        broken, e.g., 3015.
    \prevhmodegfalse
    \gmd@endpe\ignorespaces}{%
```

If a codeline ends with % (`prevhmode` == True) first \gmd@endpe sets the parameters at the TEX code values and \par closes a paragraph and the latter \gmd@endpe sets the parameters at the narration values. In the other case both \gmd@endpes do the same and \par between them does nothing.

\par
```
    \def\par{% the narration \par.
      \ifhmode% (I added this \ifhmode as a result of a heavy debug.)
        \if@afternarr\if@aftercode
            \unless\if@ilgroup\bgroup\@ilgrouptrue\fi
            \ifilrr\gmd@setilrr\fi
        \fi\fi
        \@@par
        \if@afternarr
          \if@aftercode
          \if@ilgroup\egroup\fi% if we are both after code and after narration
              it means we are after an inline comment. Then we probably end
              a group opened in line 3088
            \if@codeskipput\else\gmd@codeskip2\@aftercodegfalse%
                \fi
          \else\gmd@nocodeskip2{naC}%
          \fi
        \else\gmd@nocodeskip2{naN}%
        \fi
        \prevhmodegfalse\gmd@endpe% when taken out of \ifhmode, this line
            caused some codeline numbers were typeset with \leftskip = 0.
        \everypar=\@xa{%
          \@xa\@codetonarrskip\the\gmd@preverypar}%
        \let\par\@@par%
      \fi}% of \par.
    \gmd@endpe\ignorespaces}}
```

As we announced, we play with \leftskip inside the verbatim group and therefore we wish to restore normal \leftskip when back to normal text i.e. the commentary. But, if normal text starts in the same line as the code, then we still wish to indent such a line.

\gmd@endpe
```
\def\gmd@endpe{%
  \ifprevhmode
    \settexcodehangi%ndent
    \leftskip=\CodeIndent
  \else
    \leftskip=\TextIndent
    \hangindent=\z@
    \everypar=\@xa{%
      \@xa\@codetonarrskip\the\gmd@preverypar}%
  \fi}
```

Now a special treatment for an inline comment:

\ifilrr
```
\newif\ifilrr
```

\ilrr
```
\def\ilrr{%
  \if@aftercode
    \unless\if@ilgroup\bgroup\@ilgrouptrue\fi% If we are 'aftercode', then we are in an inline comment. Then we open a group to be able to declare e.g. \raggedright for that comment only. This group is closed in line 3045 or 2798.
    \ilrrtrue
  \fi}
```

\if@ilgroup
```
\newif\if@ilgroup
```

\gmd@setilrr
```
\def\gmd@setilrr{\rightskipoptplus\textwidth}
```

\ilju
```
\def\ilju{% when inline comments are ragged right in general but we want just this one to be justified.
  \if@aftercode
    \unless\if@ilgroup\bgroup\@ilgrouptrue\fi
    \ilrrfalse
  \fi}
```

\verbcodecorr
```
\def\verbcodecorr{% a correction of vertical spaces between a verbatim and code. We put also a \par to allow parindent in the next commentary.
  \vskip-\lastskip\vskip-4\CodeTopsep\vskip3\CodeTopsep\par}
```

Numbering (or not) of the lines

Maybe you want codelines to be numbered and maybe you want to reset the counter within sections.

```
\if@uresetlinecount% with uresetlinecount option…
  \@relaxen\gmd@resetlinecount% … we turn resetting the counter by \DocIn-
      % put off…
```

\resetlinecountwith
```
  \newcommand*\resetlinecountwith[1]{%
```

codelinenum
```
    \newcounter{codelinenum}[#1]}% … and provide a new declaration of the counter.
\else% With the option turned off…
```

DocInputsCount
```
  \newcounter{DocInputsCount}%
```

codelinenum
```
  \newcounter{codelinenum}[DocInputsCount]% … we declare the \DocInputs' number counter andthe codeline counter to be reset with stepping of it.
```

\gmd@resetlinecount
```
\newcommand*\gmd@resetlinecount{\stepcounter{DocInputsCount}}%
```
... and let the \DocInput increment the \DocInputs number count and thus reset the codeline count. It's for unique naming of the hyperref labels.
```
\fi
```

Let's define printing the line number as we did in gmvb package.

\printlinenumber
```
\newcommand*\printlinenumber{%
  \leavevmode\llap{\rlap{\LineNumFont$\phantom{999}$\llap{%
      \thecodelinenum}}%
    \hskip\leftskip}}
```

\LineNumFont
```
\def\LineNumFont{\normalfont\tiny}
```

```
\if@linesnotnum\@relaxen\printlinenumber\fi
```

\hyperlabel@line
```
\newcommand*\hyperlabel@line{%
  \if@pageindex% It's good to be able to switch it any time not just define it once
      according to the value of the switch set by the option.
  \else
    \raisebox{2ex}[1ex][\z@]{\gmhypertarget[clnum.%
      \HLPrefix\arabic{codelinenum}]{}}%
  \fi}
```

Spacing with \everypar

Last but not least, let's define the macro inserting a vertical space between the code and the narration. Its parameter is a relic of a very heavy debug of the automatic vspacing mechanism. Let it remain at least until this package is 2.0 version.

\gmd@codeskip
```
\newcommand*\gmd@codeskip[1]{%
  \@@par\addvspace\CodeTopsep
  \@codeskipputgtrue\@nostanzagfalse}
```

Sometimes we add the \CodeTopsep vertical space in \everypar. When this happens, first we remove the \parindent empty box, but this doesn't reverse putting \parskip to the main vertical list. And if \parskip is put, \addvspace shall see it not the 'true' last skip. Therefore we need a Boolean switch to keep the knowledge of putting similar vskip before \parskip.

@codeskipput

\if@codeskipput
```
\newgif\if@codeskipput
```

A switch to control \nostanzas:
```
\newgif\if@nostanza
```

The below is another relic of the heavy debug of the automatic vspacing. Let's give it the same removal clause as above.

\gmd@nocodeskip
```
\newcommand*\gmd@nocodeskip[2]{}
```

And here is how the two relic macros looked like during the debug. As you see, they are disabled by a false \if (look at it closely ;-).

```
\if1␣1
```
\gmd@codeskip
```
  \renewcommand*\gmd@codeskip[1]{%
    \hbox{\rule{1cm}{3pt}␣#1!!!}}
```
\gmd@nocodeskip
```
  \renewcommand*\gmd@nocodeskip[2]{%
    \hbox{\rule{1cm}{0.5pt}␣#1:␣#2␣}}
\fi
```

We'll wish to execute \gmd@codeskip wherever a codeline (possibly with an inline comment) is followed by a homogenic comment line or reverse. Let us dedicate a Boolean switch to this then.

\if@aftercode
```
\newgif\if@aftercode
```
This switch will be set true in the moments when we are able to switch from the TEX code into the narration and the below one when we are able to switch reversely.

\if@afternarr
```
\newgif\if@afternarr
```
To insert vertical glue between the TEX code and the narration we'll be playing with \everypar. More precisely, we'll add a macro that the \parindent box shall move and the glue shall put.

\@codetonarrskip
```
\def\@codetonarrskip{%
  \if@codeskipput\else
    \if@afternarr\gmd@nocodeskip4{iaN}\else
      \if@aftercode
```
We are at the beginning of \everypar, i.e., TEX has just entered the hmode and put the \parindent box. Let's remove it then.
```
        {\setboxo=\lastbox}%
```
Now we can put the vertical space and state we are not 'aftercode'.
```
        \gmd@codeskip4%
      \else\gmd@nocodeskip4{naC}%
      \fi
    \fi
  \fi
  \leftskip\TextIndent% this line is a patch against a bug-or-feature that in certain cases the narration \leftskip is left equal the code leftskip. (It happens when there're subsequent code lines after an inline comment not ended with an explicit \par.) Before v0.99n it was just after line 3221.
  \@aftercodegfalse\@nostanzagtrue
}
```
But we play with \everypar for other reasons too, and while restoring it, we don't want to add the \@codetonarrskip macro infinitely many times. So let us define a macro that'll check if \everypar begins with \@codetonarrskip and trim it if so. We'll use this macro with proper \expandaftering in order to give it the contents of \everypar. The work should be done in two steps first of which will be checking whether \everypar is nonempty (we can't have two delimited parameters for a macro: if we define a two-parameter macro, the first is undelimited so it has to be nonempty; it costed me some one hour to understand it).

\@trimandstore
\@trimandstore@hash
```
\long\def\@trimandstore#1\@trimandstore{%
  \def\@trimandstore@hash{#1}%
  \ifx\@trimandstore@hash\@empty% we check if #1 is nonempty. The \if%
    % \relax#1\relax trick is not recommended here because using it we couldn't avoid expanding #1 if it'd be expandable.
    \gmd@preverypar={}%
  \else
    \afterfi{\@xa\@trimandstore@ne\the\everypar\@trimandstore}%
  \fi}
```
\@trimandstore@ne
\trimmed@everypar
```
\long\def\@trimandstore@ne#1#2\@trimandstore{%
  \def\trimmed@everypar{#2}%
  \ifx\@codetonarrskip#1%
    \gmd@preverypar=\@xa{\trimmed@everypar}%
  \else
    \gmd@preverypar=\@xa{\the\everypar}%
```

```
\fi}
```

We prefer not to repeat `#1` and `#2` within the `\ifs` and we even define an auxiliary macro because `\everypar` may contain some `\ifs` or `\fis`.

Life among queer eols

When I showed this package to my TEX Guru he commended it and immediately pointed some disadvantages in the comparison with the doc package.

One of them was an expected difficulty of breaking a moving argument (e.g., of a sectioning macro) in two lines. To work it around let's define a line-end eater:

```
\catcode`\^^B=\active% note we re\catcode ⟨char2⟩ globally, for the entire document.
\foone{\obeylines}%
  {\def\QueerCharTwo{%
      \protected\def^^B##1^^M{%
        \ifhmode\unskip\space\ignorespaces\fi}}% It shouldn't be \ not to drive TEX into hmode.
  }
\QueerCharTwo
\AtBegInput{\@ifEOLactive{\catcode`\^^B\active}{}\QueerCharTwo}% We repeat redefinition of ⟨char2⟩ at begin of the documenting input, because doc.dtx suggests that some packages (namely inputenc) may re\catcode such unusual characters.
```

As you see the `^^B` active char is defined to gobble everything since itself till the end of line and the very end of line. This is intended for harmless continuing a line. The price is affecting the line numbering when `countalllines` option is enabled.

I also liked the doc's idea of comment[2] i.e., the possibility of marking some text so that it doesn't appear nor in the working version neither in the documentation, got by making `^^A` (i.e., ⟨*char1*⟩) a comment char.

However, in this package such a trick would work another way: here the line ends are active, a comment char would disable them and that would cause disasters. So let's do it an `\active` way.

```
\catcode`\^^A=\active% note we re\catcode ⟨char1⟩ globally, for the entire document.
\foone\obeylines{%
  \def\QueerCharOne{%
    \def^^A{%
      \bgroup\let\do\@makeother\dospecials\gmd@gobbleuntilM}}%
  \def\gmd@gobbleuntilM#1^^M{\egroup\ignorespaces^^M}%
}
\QueerCharOne
\AtBegInput{\@ifEOLactive{\catcode`\^^A\active}\QueerCharOne}% see note after line 3290.
```

As I suggested in the users' guide, `\StraightEOL` and `\QueerEOL` are intended to cooperate in harmony for the user's good. They take care not only of redefining the line end but also these little things related to it.

One usefulness of `\StraightEOL` is allowing linebreaking of the command arguments. Another—making possible executing some code lines during the documentation pass.

```
\def\StraightEOL{%
```

```
    \catcode`\^^M=5
    \catcode`\^^A=14
    \catcode`\^^B=14
    \def\^^M{\␣}}
\foone\obeylines{%
\QueerEOL   \def\QueerEOL{%
      \catcode`\^^M=\active%
      \let^^M\gmd@textEOL%
      \catcode`\^^A=\active%
      \catcode`\^^B=\active% I only re\catcode ⟨char1⟩ and ⟨char2⟩ hoping no
            one but me is that perverse to make them \active and (re)define. (Let
            me know if I'm wrong at this point.)
      \let\^^M=\gmd@bslashEOL}%
}
```

To make `^^M` behave more like a 'normal' lineend I command it to add a ␣10 at first. It works but has one unwelcome feature: if the line has nearly `\textwidth`, this closing space may cause line breaking and setting a blank line. To fix this I `\advance` the `\parfillskip`:

```
\gmd@parfixclosingspace \def\gmd@parfixclosingspace{{%
      \advance\parfillskip␣by-\gmd@closingspacewd
      \if@aftercode\ifilrr␣\gmd@setilrr␣\fi\fi
      \par}%
    \if@ilgroup\aftergroup\egroup\@ilgroupfalse\fi% we are in the verba-
          tim group so we close the inline comment group after it if the closing is not
          yet set.
}
```

We'll put it in a group surrounding `\par` but we need to check if this `\par` is executed after narration or after the code, i.e., whether the closing space was added or not.

```
\gmd@closingspacewd   \newskip\gmd@closingspacewd
\gmd@setclosingspacewd \newcommand*\gmd@setclosingspacewd{%
    \global\gmd@closingspacewd=\fontdimen2\font%
      plus\fontdimen3\font␣minus\fontdimen4\font\relax}
```

See also line 2734 to see what we do in the codeline case when no closing space is added.

And one more detail:

```
\foone\obeylines{%
    \if␣1␣1%
\gmd@bslashEOL      \protected\def\gmd@bslashEOL{\␣\@xa\ignorespaces^^M}%
    }% of \foone. Note we interlace here \if with a group.
\else%
\gmd@bslashEOL      \protected\def\gmd@bslashEOL{%
      \ifhmode\unskip\fi\␣\ignorespaces}
    \fi
```

The `\QueerEOL` declaration will `\let` it to `\^^M` to make `\^^M` behave properly. If this definition was ommitted, `\^^M` would just expand to `\␣` and thus not gobble the leading `%` of the next line leave alone typesetting the TEX code. I type `\␣` etc. instead of just `^^M` which adds a space itself because I take account of a possibility of redefining the `\␣` cs by the user, just like in normal TEX.

We'll need it for restoring queer definitions for doc-compatibility.

Adjustment of `verbatim` and `\verb`

To make `verbatim(*)` typeset its contents with the TEX code's indentation:

\@verbatim
```
\gaddtomacro\@verbatim{\leftskip=\CodeIndent}
```

And a one more little definition to accomodate `\verb` and pals for the lines commented out.

\check@percent
```
\AtBegInput{\long\def\check@percent#1{%
    \gmd@cpnarrline% to count the verbatim lines and possibly print their numbers. This macro is used only by the verbatim end of line.
    \@xa\ifx\code@delim#1\else\afterfi{#1}\fi}}
```

We also redefine gmverb's `\AddtoPrivateOthers` that has been provided just with gmdoc's need in mind.

\AddtoPrivateOthers
```
\def\AddtoPrivateOthers#1{%
  \@xa\def\@xa\doprivateothers\@xa{%
    \doprivateothers\do#1}}%
```

We also redefine an internal `\verb`'s macro `\gm@verb@eol` to put a proper line end if a line end char is met in short verbatim: we have to check if we are in 'queer' or 'straight' EOLS area.

\gm@verb@eol
\verb@egroup
```
\begingroup
\obeylines%
\AtBegInput{\def\gm@verb@eol{\obeylines%
    \def^^M{\verb@egroup\@latex@error{%
        \@nx\verb␣ended␣by␣end␣of␣line}%
      \@ifEOLactive{^^M}{\@ehc}}}}%
\endgroup
```

Macros for marking of the macros

A great inspiration for this part was the doc package again. I take some macros from it, and some tasks I solve a different way, e.g., the \ (or another escapechar) is not active, because anyway all the chars of code are scanned one by one. And exclusions from indexing are supported not with a list stored as `\toks` register but with separate control sequences for each excluded cs.

The doc package shows a very general approach to the indexing issue. It assumes using a special MakeIndex style and doesn't use explicit MakeIndex controls but provides specific macros to hide them. But here in gmdoc we prefer no special style for the index.

\actualchar
\quotechar
\encapchar
\levelchar
```
\edef\actualchar{\string␣@}
\edef\quotechar{\string␣"}
\edef\encapchar{\xiiclub}
\edef\levelchar{\string␣!}
```

However, for the glossary, i.e., the change history, a special style is required, e.g., gmglo.ist, and the above macros are redefined by the `\changes` command due to gmglo.ist and gglo.ist settings.

Moreover, if you insist on using a special MakeIndex style, you may redefine the above four macros in the preamble. The `\edef`s that process them further are postponed till `\begin{document}`.

\CodeEscapeChar
```
\def\CodeEscapeChar#1{%
  \begingroup
  \escapechar\m@ne
```

\code@escape@char
```
\xdef\code@escape@char{\string#1}%
\endgroup}
```

As you see, to make a proper use of this macro you should give it a \⟨*one char*⟩ cs as an argument. It's an invariant assertion that `\code@escape@char` stores 'other' version of the code layer escape char.

```
\CodeEscapeChar\\
```

As mentioned in doc, someone may have some chars $_{11}$ed.

```
\@ifundefined{MakePrivateLetters}{%
```
\MakePrivateLetters
```
  \def\MakePrivateLetters{\makeatletter\catcode`\*=11␣}}{}
```

A tradition seems to exist to write about e.g., 'command `\section` and command `\section*`' and such an uderstanding also of 'macro' is noticeable in doc. Making the `*` a letter solves the problem of scanning starred commands.

And you may wish some special chars to be $_{12}$.

\MakePrivateOthers
```
\def\MakePrivateOthers{\let\do=\@makeother␣\doprivateothers}
```

We use this macro to re`\catcode` the space for marking the environments' names and the caret for marking chars such as `^^M`, see line 4979. So let's define the list:

\doprivateothers
```
\def\doprivateothers{\do\␣\do\^}
```

Two chars for the beginning, and also the `\MakeShortVerb` command shall this list enlarge with the char(s) declared. (There's no need to add the backslash to this list since all the relevant commands `\string` their argument whatever it is.)

Now the main macro indexing a macro's name. It would be a verbatim :-) copy of the doc's one if I didn't ommit some lines irrelevant with my approach.

\scan@macro
```
\def\scan@macro#1{%
```
we are sure to scan at least one token and therefore we define this macro as one-parameter.

Unlike in doc, here we have the escape char $_{12}$ so we may just have it printed during main scan char by char, i.e., in the lines 2937 and 2941.

So, we step the checksum counter first,

```
  \step@checksum%
```
(see line 6161 for details),

Then, unlike in doc, we do *not* check if the scanning is allowed, because here it's always allowed and required.

Of course, I can imagine horrible perversities, but I don't think they should really be taken into account. Giving the letter `a` `\catcode` other than $_{11}$ surely would be one of those perversities. Therefore I feel safe to take the character `a` as a benchmark letter.

```
  \ifcat␣a\@nx#1%
    \quote@char#1%
    \xdef\macro@iname{\gmd@maybequote#1}%
```
global for symmetry with line 3579.
```
    \xdef\macro@pname{\string#1}%
```
we'll print entire name of the macro later.

We `\string` it here and in the lines 3583 and 3595 to be sure it is whole $_{12}$ for easy testing for special indexentry formats, see line 4485 etc. Here we are sure the result of `\string` is $_{12}$ since its argument is $_{11}$.

```
    \afterfi{\@ifnextcat{a}{\gmd@finishifstar#1}{%
        \finish@macroscan}}%
  \else%
```
`#1` is not a letter, so we have just scanned a one-char cs.

Another reasonable `\catcodes` assumption seems to be that the digits are $_{12}$. Then we don't have to type (%)`\expandafter\@gobble\string\a`. We do the `\uccode` trick to be sure that the char we write as the macro's name is $_{12}$.

```
    {\uccode`9=`#1%
      \uppercase{\xdef\macro@iname{9}}%
    }%
    \quote@char#1%
    \xdef\macro@iname{\gmd@maybequote\macro@iname}%
    \xdef\macro@pname{\xiistring#1}%
    \afterfi␣\finish@macroscan
  \fi}
```

The \xiistring macro, provided by gmutils, is used instead of original \string because we wish to get ␣12('other' space).

Now, let's explain some details, i.e., let's define them. We call the following macro having known #1 to be 11.

\continue@macroscan
```
\def\continue@macroscan#1{%
  \quote@char#1%
  \xdef\macro@iname{\macro@iname␣\gmd@maybequote#1}%
  \xdef\macro@pname{\macro@pname␣\string#1}% we know#1 to be 11, so we
       don't need \xiistring.
  \@ifnextcat{a}{\gmd@finishifstar#1}{\finish@macroscan}%
}
```

As you may guess, \@ifnextcat is defined analogously to \@ifnextchar but the test it does is \ifcat (not \ifx). (Note it wouldn't work for an active char as the 'pattern'.)

We treat the star specially since in usual LaTeX it should finish the scanning of a cs name—we want to avoid scanning \command*argum as one cs.

\gmd@finishifstar
```
\def\gmd@finishifstar#1{%
  \if*\@nx#1\afterfi\finish@macroscan% note we protect #1 against expan-
       sion. In gmdoc verbatim scopes some chars are active (e.g. \ ).
  \else\afterfi\continue@macroscan
  \fi}
```

If someone *really* uses * as a letter please let me know.

\quote@char
```
\def\quote@char#1{{\uccode`9=`#1% at first I took digit 1 for this \uccodeing
     but then #1 meant #⟨#1⟩ in \uppercase's argument, of course.
    \uppercase{%
      \gmd@ifinmeaning␣9\of␣\indexcontrols
      {\glet\gmd@maybequote\quotechar}%
      {\g@emptify\gmd@maybequote}%
    }%
  }}
```

And now let's take care of the MakeIndex control characters. We'll define a list of them to check whether we should quote a char or not. But we'll do it at \begin{% document} to allow the user to use some special MakeIndex style and in such a case to redefine the four MakeIndex controls' macros. We enrich this list with the backslash because sometimes MakeIndex didn't like it unquoted.

\indexcontrols
```
\AtBeginDocument{\xdef\indexcontrols{%
    \bslash\levelchar\encapchar\actualchar\quotechar}}
```

\gmd@ifinmeaning
```
\long\def␣\gmd@ifinmeaning#1\of#2#3#4{% explained in the text paragraph
     below.
```

\gmd@in@@
```
  \long\def\gmd@in@@##1#1##2\gmd@in@@{%
    \ifx^^A##2^^A\afterfi{#4}%
```

```
    \else\afterfi{#3}%
    \fi}%
  \@xa\gmd@in@@#2#1\gmd@in@@}%
```

This macro is used for catching chars that are MakeIndex's controls. How does it work?

`\quote@char` sort of re`\catcode`s its argument through the `\uccode` trick: assigns the argument as the uppercase code of the digit 9 and does further work in the `\uppercase`'s scope so the digit 9 (a benchmark 'other') is substituted by `#1` but the `\catcode` remains so `\gmd@ifinmeaning` gets `\quote@char`'s `#1` 'other'ed as the first argument.

The meaning of the `\gmd@ifinmeaning` parameters is as follows:

`#1` the token(s) whose presence we check,
`#2` the macro in whose meaning we search `#1` (the first token of this argument is expanded one level with `\expandafter`),
`#3` the 'if found' stuff,
`#4` the 'if not found' stuff.

In `\quote@char` the second argument for `\gmd@ifinmeaning` is `\indexcontrols` defined as the (expanded and 'other') sequence of the MakeIndex controls. `\gmd@ifinmeaning` defines its inner macro `\gmd@in@@` to take two parameters separated by the first and the second `\gmd@ifinmeaning`'s parameter, which are here the char investigated by `\quote@char` and the `\indexcontrols` list. The inner macro's parameter string is delimited by the macro itself, why not. `\gmd@in@@` is put before a string consisting of `\gmd@ifinmeaning`'s second and first parameters (in such a reversed order) and `\gmd@in@@` itself. In such a sequence it looks for something fitting its parameter pattern. `\gmd@in@@` is sure to find the parameters delimiter (`\gmd@in@@` itself) and the separator, `\ifismember`'s `#1` i.e., the investigated char, because they are just there. But the investigated char may be found not near the end, where we put it, but among the MakeIndex controls' list. Then the rest of this list and `\ifismember`'s `#1` put by us become the secong argument of `\gmd@in@@`. What `\gmd@in@@` does with its arguments, is just a check whether the second one is empty. This may happen *iff* the investigated char hasn't been found among the MakeIndex controls' list and then `\gmd@in@@` shall expand to `\iffalse`, otherwise it'll expand to `\iftrue`. (The `\after...` macros are employed not to (mis)match just got `\if...` with the test's `\fi`.) "(Deep breath.) You got that?" If not, try doc's explanation of `\ifnot@excluded`, pp. 36–37 of the v2.1b dated 2004/02/09 documentation, where a similar construction is attributed to Michael Spivak.

Since version 0.99g `\gmd@ifinmeaning` is used also in testing whether a detector is already present in the carrier in the mechanism of automatic detection of definitions (line 3843).

`\ifgmd@glosscs` 3700 `\newif\ifgmd@glosscs%` we use this switch to keep the information whether a history entry is a cs or not.

`\finish@macroscan` 3704 `\newcommand*\finish@macroscan{%`

First we check if the current cs is not just being defined. The switch may be set true in line 3740

```
3707    \ifgmd@adef@cshook% if so, we throw it into marginpar and index as a def entry…
3709    \@ifundefined{gmd/iexcl/\macro@pname}{% … if it's not excluded from indexing.
3711      \@xa\Code@MarginizeMacro\@xa{\macro@pname}%
3712      \@xa\@defentryze\@xa{\macro@pname}{1}}{}% here we declare the kind of index entry and define \last@defmark used by \changes
```

```
    \global\gmd@adef@cshookfalse% we falsify the hook that was set true just
        for this cs.
  \fi
```

We have the cs's name for indexing in `\macro@iname` and for print in `\macro@pname`. So we index it. We do it a bit countercrank way because we wish to use more general indexing macro.

```
  \if\verbatimchar\macro@pname% it's important that \verbatimchar comes
      before the macro's name: when it was reverse, the \tt cs turned this test
      true and left the \verbatimchar what resulted with '\+tt' typeset. Note
      that this test should turn true iff the scanned macro name shows to be the
      default \verb's delimiter. In such a case we give \verb another delimiter,
      namely $:
\im@firstpar    \def\im@firstpar{[$%
                  ]}%
\im@firstpar    \else\def\im@firstpar{}\fi
                \@xa␣\index@macro\im@firstpar\macro@iname\macro@pname
                \maybe@marginpar\macro@pname
                \if\xiispace\macro@pname\relax\gmd@texcodespace
                \else\macro@pname
                \fi
                \let\next\gmd@charbychar
                \gmd@detectors% for automatic detection of definitions. Defined and ex-
                    plained in the next section. It redefines \next if detects a definition com-
                    mand and thus sets the switch of line 3704 true.
                \next
  }
```

Now, the macro that checks whether the just scanned macro should be put into a marginpar: it checks the meaning of a very special cs: whose name consists of `gmd/2marpar/` and of the examined macro's name.

```
\maybe@marginpar \def\maybe@marginpar#1{%
                  \@ifundefined{gmd/2marpar/#1}{}{%
                    \@xa\Text@Marginize\@xa{\bslash#1}% \expandafters
                        because the \Text@Marginize command applies \string to its argument.
                        % \macro@pname, which will be the only possible argument to \maybe-
                        % @marginpar, contains the macro's name without the escapechar so we
                        added it here.
                    \@xa\g@relaxen\csname␣gmd/2marpar/#1\endcsname% we reset the switch.
                  }}
```

Since version 0.99g we introduce automatic detection of definitions, it will be implemented in the next section. The details of indexing cses are implemented in the section after it.

Automatic detection of definitions

To begin with, let's introduce a general declaration of a defining command. `\Declare-Defining` comes in two flavours: 'sauté', and with star. The 'sauté' version without an optional argument declares a defining command of the kind of `\def` and `\newcommand`: whether wrapped in braces or not, its main argument is a cs. The star version without the optional argument declares a defining command of the kind of `\newenvironment` and `\DeclareOption`: whose main mandatory argument is text. Both versions provide an optional argument in which you can set the keys. Probably the most important key is

star. It determines whether the starred version of a defining command should be taken into account. For example, \newcommand should be declared with [star=true] while \def with [star=false]. You can also write just [star] instead of [star=true]. It's the default if the star key is omitted.

Another key is type. Its possible values are the (backslashless) names of the defining commands, see below.

We provide now more keys for the xkeyvalish definitions: KVpref (the key prefix) and KVfam (the key family). If not set by the user, they are assigned the default values as in xkeyval: KVpref letters KV and KVfam the input file name. The latter assignment is done only for the \DeclareOptionX defining command because in other xkeyval definitions (\define@(...)key) the family is mandatory.

Let's make a version of \@ifstar that would work with $*_{11}$. It's analogous to \@ifstar.

```
\foone{\catcode`\*=11 }
  {\def\@ifstarl#1{\@ifnextchar *{\@firstoftwo{#1}}}}
```

\@ifstarl

\DeclareDefining and the detectors

Note that the main argument of the next declaration should be a cs *without star*, unless you wish to declare only the starred version of a command. The effect of this command is always global.

```
\outer\def\DeclareDefining{\begingroup
  \MakePrivateLetters
  \@ifstarl
    {\gdef\gmd@adef@defaulttype{text}\Declare@Dfng}%
    {\gdef\gmd@adef@defaulttype{cs}\Declare@Dfng}%
}
```

\DeclareDefining

The keys except star depend of \gmd@adef@currdef, therefore we set them having known both arguments

```
\newcommand*\Declare@Dfng[2][]{%
  \endgroup
  \Declare@Dfng@inner{#1}{#2}%
  \ifgmd@adef@star% this swith may be set false in first \Declare@Dfng@inner
                  (it's the star key).
    \Declare@Dfng@inner{#1}{#2*}% The catcode of * doesn't matter since it's
                  in \csname...\endcsname everywhere.
  \fi}
```

\Declare@Dfng

```
\def\Declare@Dfng@inner#1#2{%
  \edef\gmd@resa{%
    \@nx\setkeys[gmd]{adef}{type=\gmd@adef@defaulttype}}%
  \gmd@resa
  {\escapechar\m@ne
    \xdef\gmd@adef@currdef{\string#2}%
  }%
  \gmd@adef@setkeysdefault
  \setkeys[gmd]{adef}{#1}%
  \@xa\gmd@ifinmeaning
    \csname gmd@detect@\gmd@adef@currdef\endcsname
    \of\gmd@detectors{}{%
      \@xa\gaddtomacro\@xa\gmd@detectors\@xa{%
```

\Declare@Dfng@inner

\gmd@adef@currdef

```
3847          \csname␣gmd@detect@\gmd@adef@currdef\endcsname}}% we add a cs
                % \gmd@detect@⟨def name⟩ (a detector) to the meaning of the detectors' carrier. And we define it to detect the #2 command.
3851    \@xa\xdef\csname␣gmd@detectname@\gmd@adef@currdef\endcsname{%
3852      \gmd@adef@currdef}%
3853    \edef\gmu@tempa{% this \edef is to expand \gmd@adef@TYPE.
3854      \global\@nx\@namedef{gmd@detect@\gmd@adef@currdef}{%
3855        \@nx\ifx
3856          \@xa\@nx\csname␣gmd@detectname@\gmd@adef@currdef%
                \endcsname
3857          \@nx\macro@pname
3858          \@nx\n@melet{next}{gmd@adef@\gmd@adef@TYPE}%
3859          \@nx\n@melet{gmd@adef@currdef}{gmd@detectname@%
                \gmd@adef@currdef}%
3860        \@nx\fi}}%
3861    \gmu@tempa
3862    \SMglobal\StoreMacro*{gmd@detect@\gmd@adef@currdef}% we store the cs
         to allow its temporary discarding later.
3864  }
```

`\gmd@adef@setkeysdefault`

```
3867  \def\gmd@adef@setkeysdefault{%
3868    \setkeys[gmd]{adef}{star,prefix,KVpref}}
```

Note we don't set `KVfam`. We do not so because for `\define@key`-likes family is a mandatory argument and for `\DeclareOptionX` the default family is set to the input file name in line 4041.

star

```
3874  \define@boolkey[gmd]{adef}{star}[true]{}
```

The `prefix@`⟨*command*⟩ keyvalue will be used to create additional index entry for detected definiendum (a **definiendum** is the thing defined, e.g. in `\newenvironment{foo}` the env. `foo`). For instance, `\newcounter` is declared with `[prefix=\bslash␣c@]` in line 4294 and therefore `\newcounter{foo}` occurring in the code will index both `foo` and `\c@foo` (as definition entries).

prefix

```
3883  \define@key[gmd]{adef}{prefix}[]{%
3884    \edef\gmd@resa{%
3885      \def\@xa\@nx\csname␣gmd@adef@prefix@\gmd@adef@currdef␣%
            \endcsname{%
3886        #1}}%
3887    \gmd@resa}
```

`\gmd@KVprefdefault`

```
3890  \def\gmd@KVprefdefault{KV}% in a separate macro because we'll need it in \ifx.
```

A macro `\gmd@adef@KVprefixset@`⟨*command*⟩ if defined, will falsify an `\ifnum` test that will decide whether create additional index entry together with the tests for `prefix`⟨*command*⟩ and

KVpref

```
3898  \define@key[gmd]{adef}{KVpref}[\gmd@KVprefdefault]{%
3899    \edef\gmd@resa{#1}%
3900    \ifx\gmd@resa\gmd@KVprefdefault
3901    \else
3902      \@namedef{gmd@adef@KVprefixset@\gmd@adef@currdef}{1}%
3903      \gmd@adef@setKV% whenever the KVpreffix is set (not default), the declared
            command is assumed to be keyvalish.
3905    \fi
3906    \edef\gmd@resa{#1}% because \gmd@adef@setKV redefined it.
3907    \edef\gmd@resa{%
```

```
3908      \def\@xa\@nx\csname␣gmd@adef@KVpref@\gmd@adef@currdef%
              \endcsname{%
3909        \ifx\gmd@resa\empty
3910        \else#1@\fi}}% as in xkeyval, if the KV prefix is not empty, we add @ to it.
3912    \gmd@resa}
```

Analogously to `KVpref`, `KVfam` declared in `\DeclareDefining` will override the family scanned from the code and, in `\DeclareOptionX` case, the default family which is the input file name (only for the command being declared).

KVfam
```
3919 \define@key[gmd]{adef}{KVfam}[]{%
3920   \edef\gmd@resa{#1}%
3921   \@namedef{gmd@adef@KVfamset@\gmd@adef@currdef}{1}%
3922   \edef\gmd@resa{%
3923     \def\@xa\@nx\csname␣gmd@adef@KVfam@\gmd@adef@currdef%
           \endcsname{%
3924       \ifx\gmd@resa\empty
3925       \else#1@\fi}}%
3926   \gmd@resa
3927   \gmd@adef@setKV}% whenever the KVfamily is set, the declared command is assumed to be keyvalish.
```

type
```
3931 \define@choicekey[gmd]{adef}{type}
3932   [\gmd@adef@typevals\gmd@adef@typenr]
3933   {% the list of possible types of defining commands
3934     def,
3935     newcommand,
3936     cs,% equivalent to the two above, covers all the cases of defining a CS, including
           the PLAIN TEX \new... and LATEX \newlength.
3939     newenvironment,
3940     text,% equivalent to the one above, covers all the commands defining its first
           mandatory argument that should be text, \DeclareOption e.g.
3943     define@key,% special case of more arguments important; covers the xkeyval
           defining commands.
3945     dk,% a shorthand for the one above.
3946     DeclareOptionX,% another case of special arguments configuration, covers the
           xkeyval homonym.
3948     dox,% a shorthand for the one above.
3949     kvo% one of option defining commands of the kvoptions package by Heiko
           Oberdiek (a package available o CTAN in the oberdiek bundle).
3952   }
3953   {% In fact we collapse all the types just to four so far:
3954     \ifcase\gmd@adef@typenr% if def
3955       \gmd@adef@settype{cs}{o}%
3956     \or% when newcommand
3957       \gmd@adef@settype{cs}{o}%
3958     \or% when cs
3959       \gmd@adef@settype{cs}{o}%
3960     \or% when newenvironment
3961       \gmd@adef@settype{text}{o}%
3962     \or% when text
3963       \gmd@adef@settype{text}{o}%
3964     \or% when define@key
3965       \gmd@adef@settype{dk}{1}%
3966     \or% when dk
```

```
      \gmd@adef@settype{dk}{1}%
    \or% when DeclareOptionX
      \gmd@adef@settype{dox}{1}%
    \or% when dox
      \gmd@adef@settype{dox}{1}%
    \or% when kvo
      \gmd@adef@settype{text}{1}% The kvoptions option definitions take first
          mandatory argument as the option name and they define a keyval key
          whose macro's name begins with the prefix/family, either default or
          explicitly declared. The kvoptions prefix/family is supported in gmdoc
          with [KVpref=, KVfam=⟨family⟩].
    \fi}
\gmd@adef@settype \def\gmd@adef@settype#1#2{%
 \gmd@adef@TYPE  \def\gmd@adef@TYPE{#1}%
    \ifnum1=#2 % now we define (or not) a quasi-switch that fires for the keyvalish
          definition commands.
      \gmd@adef@setKV
    \fi}
 \gmd@adef@setKV \def\gmd@adef@setKV{%
    \edef\gmd@resa{%
      \def\@xa\@nx\csname gmd@adef@KV@\gmd@adef@currdef\endcsname{%
          1}%
    }%
    \gmd@resa}
```

We initialize the carrier of detectors:

```
\emptify\gmd@detectors
```

The definiendum of a command of the `cs` type is the next control sequence. Therefore we only need a self-relaxing hook in `\finish@macroscan`.

```
\ifgmd@adef@cshook \newif\ifgmd@adef@cshook
    \gmd@adef@cs \def\gmd@adef@cs{\global\gmd@adef@cshooktrue\gmd@charbychar}
```

For other kinds of definitions we'll employ active chars of their arguments' opening braces, brackets and seargants. In gmdoc code layer scopes the left brace is active so we only add a hook to its meaning (see line 290 in gmverb) and **??**nd here we switch it according to the type of detected definition.

```
\gmd@adef@text \def\gmd@adef@text{\gdef\gmd@lbracecase{1}\gmd@charbychar}
\foone{%
  \catcode`\[\active
  \catcode`\<\active}
{%
```

The detector of xkeyval `\define@(...)key`:

```
  \gmd@adef@dk \def\gmd@adef@dk{%
    \let[\gmd@adef@scanKVpref
    \catcode`\[\active
    \gdef\gmd@lbracecase{2}%
    \gmd@adef@dfKVpref\gmd@KVprefdefault% We set the default value of
        the xkeyval prefix. Each time again because an assignment
        in \gmd@adef@dfKVpref is global.
    \gmd@adef@checklbracket}
```

The detector of xkeyval \DeclareOptionX:

\gmd@adef@dox
```
\def\gmd@adef@dox{%
  \let[\gmd@adef@scanKVpref
  \let<\gmd@adef@scanDOXfam
  \catcode`[\active
  \catcode`<\active
  \gdef\gmd@lbracecase{1}%
  \gmd@adef@dfKVpref\gmd@KVprefdefault% We set the default values of the
        xkeyval prefix…
  \edef\gmd@adef@fam{\gmd@inputname}% … and family.
  \gmd@adef@dofam
  \gmd@adef@checkDOXopts}%
}
```

The case when the right bracket is next to us is special because it is already touched by \futurelet (of cses scanning macro's \@ifnextcat), therefore we need a 'future' test.

\gmd@adef@checklbracket
```
\def\gmd@adef@checklbracket{%
  \@ifnextchar[%
  \gmd@adef@scanKVpref\gmd@charbychar}% note that the prefix scanning
        macro gobbles its first argument (undelimited) which in this case is [.
```

After a \DeclareOptionX-like defining command not only the prefix in square brackets may occur but also the family in seargants. Therefore we have to test presence of both of them.

\gmd@adef@checkDOXopts
```
\def\gmd@adef@checkDOXopts{%
  \@ifnextchar[\gmd@adef@scanKVpref%
  {\@ifnextchar<\gmd@adef@scanDOXfam\gmd@charbychar}}
```

\gmd@adef@scanKVpref
```
\def\gmd@adef@scanKVpref#1#2]{%
  \gmd@adef@dfKVpref{#2}%
  [#2]\gmd@charbychar}
```

\gmd@adef@dfKVpref
```
\def\gmd@adef@dfKVpref#1{%
  \ifnum1=0\csname␣gmd@adef@KVprefixset@\gmd@adef@currdef%
        \endcsname
    \relax
  \else
    \edef\gmu@resa{%
    \gdef\@xa\@nx
    \csname␣gmd@adef@KVpref@\gmd@adef@currdef\endcsname{%
      \ifx\relax#1\relax
      \else#1@%
      \fi}}%
    \gmu@resa
  \fi}
```

\gmd@adef@scanDOXfam
```
\def\gmd@adef@scanDOXfam{%
  \ifnum12=\catcode`\>\relax
    \let\next\gmd@adef@scanfamoth
  \else
    \ifnum13=\catcode`\>\relax
      \let\next\gmd@adef@scanfamact
    \else
```

```
      \PackageError{gmdoc}{>␣neither␣`other'␣nor␣`active'!␣Make␣it
        `other'␣with␣\bslash␣AddtoPrivateOthers\bslash\>.}%
    \fi
  \fi
  \next}
\gmd@adef@scanfamoth \def\gmd@adef@scanfamoth#1>{%
    \edef\gmd@adef@fam{\@gobble#1}% there is always \gmd@charbychar first.
    \gmd@adef@dofam
    <\gmd@adef@fam>%
  \gmd@charbychar}
\foone{\catcode`\>\active}
\gmd@adef@scanfamact  {\def\gmd@adef@scanfamact#1>{%
      \edef\gmd@adef@fam{\@gobble#1}% there is always \gmd@charbychar first.
      \gmd@adef@dofam
      <\gmd@adef@fam>%
      \gmd@charbychar}%
  }
```

The hook of the left brace consists of `\ifcase` that logically consists of three subcases:

0 —the default: do nothing in particular;

1 —the detected defining command has one mandatory argument (is of the `text` type, including kvoptions option definition);

2–3 —we are after detection of a `\define@key`-like command so we have to scan *two* mandatory arguments (case 2 is for the family, case 3 for the key name).

```
\gm@lbracehook \def\gm@lbracehook{%
  \ifcase\gmd@lbracecase\relax
  \or% when 1
    \afterfi{%
      \gdef\gmd@lbracecase{0}%
      \gmd@adef@scanname}%
  \or% when 2—the first mandatory argument of two (\define@(...)key)
    \afterfi{%
    \gdef\gmd@lbracecase{3}%
     \gmd@adef@scanDKfam}%
  \or% when 3—the second mandatory argument of two (the key name).
    \afterfi{%
      \gdef\gmd@lbracecase{0}%
      \gmd@adef@scanname}%
  \fi}
\gmd@lbracecase \def\gmd@lbracecase{0}% we initialize the hook caser.
```

And we define the inner left brace macros:

```
\foone{\catcode`\[1␣\catcode`\]2␣\catcode`\}12␣}
  [% Note that till line ?? the square brackets are grouping and the right brace is 'other'.
```

Define the macro that reads and processes the `\define@key` family argument. It has the parameter delimited with 'other' right brace. An active left brace that has launched this macro had been passed through iterating `\gmd@charbychar` that now stands next right to us.

```
\gmd@adef@scanDKfam  \def\gmd@adef@scanDKfam#1}[%
```

```
    \edef\gmd@adef@fam[\@gobble#1]% there is always \gmd@charbychar first.
    \gmd@adef@dofam
    \gmd@adef@fam}%
  \gmd@charbychar]
\gmd@adef@scanname \def\gmd@adef@scanname#1}[%
    \@makeother\[%
    \@makeother\<%
```

The scanned name begins with `\gmd@charbychar`, we have to be careful.

```
    \gmd@adef@deftext[#1]%
    \@gobble#1}%
    \gmd@charbychar]
  ]
\gmd@adef@dofam \def\gmd@adef@dofam{%
  \ifnum1=o\csname␣gmd@adef@KVfamset@\gmd@adef@currdef\endcsname
    \relax% a family declared with \DeclareDefining overrides the one currently scanned.
  \else
    \edef\gmu@resa{%
      \gdef\@xa\@nx
      \csname␣gmd@adef@KVfam@\gmd@adef@currdef\endcsname
      {\ifx\gmd@adef@fam\empty
        \else\gmd@adef@fam␣@%
        \fi}}%
    \gmu@resa
  \fi}
\gmd@adef@deftext \def\gmd@adef@deftext#1{%
  \edef\macro@pname{\@gobble#1}% we gobble \gmd@charbychar, cf. above.
  \@xa\Text@Marginize\@xa{\macro@pname}%
  \gmd@adef@indextext
  \edef\gmd@adef@altindex{%
    \csname␣gmd@adef@prefix@\gmd@adef@currdef␣\endcsname}%
```

and we add the xkeyval header if we are in xkeyval definition.

```
  \ifnum1=o\csname␣gmd@adef@KV@\gmd@adef@currdef␣\endcsname%
      \relax% The cs \gmd@adef@KV@⟨def. command⟩ is defined {1} (so \ifnum gets 1=o1\relax—true) iff ⟨def. command⟩ is a keyval definition. In that case we check for the KVprefix and KVfamily. (Otherwise \gmd@adef@KV@⟨def. command⟩ is undefined so \ifnum gets 1=o\relax—false.)
    \edef\gmd@adef@altindex{%
      \gmd@adef@altindex
      \csname␣gmd@adef@KVpref@\gmd@adef@currdef␣\endcsname}%
    \edef\gmd@adef@altindex{%
      \gmd@adef@altindex
      \csname␣gmd@adef@KVfam@\gmd@adef@currdef␣\endcsname}%
  \fi
  \ifx\gmd@adef@altindex\empty
  \else% we make another index entry of the definiendum with prefix/KVheader.
    \edef\macro@pname{\gmd@adef@altindex\macro@pname}%
    \gmd@adef@indextext
  \fi}
```

```
\gmd@adef@indextext
4215 \def\gmd@adef@indextext{%
4216   \@xa\@defentryze\@xa{\macro@pname}{o}% declare the definiendum has to
         have a definition entry and in the changes history should appear without
         backslash.
4219   \gmd@doindexingtext% redefine \do to an indexing macro.
4221   \@xa\do\@xa{\macro@pname}}
```

So we have implemented automatic detection of definitions. Let's now introduce some.

Default defining commands

Some commands are easy to declare as defining:

```
4235 \DeclareDefining[star=false]\def
\pdef
4236 \DeclareDefining[star=false]\pdef% it's a gmutils' shorthand for \protected
       % \def.
\provide
4237 \DeclareDefining[star=false]\provide% a gmutils' conditional \def.
\pprovide
4238 \DeclareDefining[star=false]\pprovide% a gmutils' conditional \pdef.
```

But `\def` definitely *not always* defines an important macro. Sometimes it's just a scratch assignment. Therefore we define the next declaration. It turns the next occurence of `\def` off (only the next one).

```
\UnDef
4246 \def\UnDef{{%
4250     \gmd@adef@selfrestore\def
4251   }}
4253 \StoreMacro\UnDef% because the 'hiding' commands relax it.
\HideDef
4255 \def\HideDef{%
\relaxen
4257   \@ifstar\UnDef{\HideDefining\def\relaxen\UnDef}}
\ResumeDef
4259 \def\ResumeDef{\ResumeDefining\def\RestoreMacro\UnDef}
\RestoreMacro
```

Note that I *don't* declare `\gdef`, `\edef` neither `\xdef`. In my opinion their use as 'real' definition is very rare and then you may use `\Define` implemented later.

```
\newcount
4266 \DeclareDefining[star=false]\newcount
\newdimen
4267 \DeclareDefining[star=false]\newdimen
\newskip
4268 \DeclareDefining[star=false]\newskip
4269 \DeclareDefining[star=false]\newif
\newtoks
4270 \DeclareDefining[star=false]\newtoks
\newbox
4271 \DeclareDefining[star=false]\newbox
\newread
4272 \DeclareDefining[star=false]\newread
\newwrite
4273 \DeclareDefining[star=false]\newwrite
\newlength
4274 \DeclareDefining[star=false]\newlength
\DeclareDocumentCommand
4275 \DeclareDefining[star=false]\DeclareDocumentCommand
4279 \DeclareDefining\newcommand
\renewcommand
4280 \DeclareDefining\renewcommand
4281 \DeclareDefining\providecommand
\DeclareRobustCommand
4282 \DeclareDefining\DeclareRobustCommand
\DeclareTextCommand
4283 \DeclareDefining\DeclareTextCommand
\DeclareTextCommandDefault
4284 \DeclareDefining\DeclareTextCommandDefault
4286 \DeclareDefining*\newenvironment
4287 \DeclareDefining*\renewenvironment
\DeclareOption
4288 \DeclareDefining*\DeclareOption
   %\DeclareDefining*\@namedef
```

\newcounter
```
\DeclareDefining*[prefix=\bslash␣c@]\newcounter
```
% this prefix provides indexing also \c@⟨*counter*⟩.

\define@key
\define@boolkey
\define@choicekey
```
\DeclareDefining[type=dk,␣prefix=\bslash]\define@key
\DeclareDefining[type=dk,␣prefix=\bslash␣if]\define@boolkey
\DeclareDefining[type=dk,␣prefix=\bslash]\define@choicekey
```
% the alternate index entry will be \if⟨*KVpref*⟩@⟨*KVfam*⟩@⟨*key name*⟩

\DeclareOptionX
```
\DeclareDefining[type=dox,␣prefix=\bslash]\DeclareOptionX
```
% the alternate index entry will be \⟨*KVpref*⟩@⟨*KVfam*⟩@⟨*option name*⟩.

For \DeclareOptionX the default KVfamily is the input file name. If the source file name differs from the name of the goal file (you TEX a .dtx not .sty e.g.), there is the next declaration. It takes one optional and one mandatory argument. The optional is the KVpref, the mandatory the KVfam.

\DeclareDOXHead
\DeclareOptionX
```
\newcommand*\DeclareDOXHead[2][\gmd@KVprefdefault]{%
  \csname␣DeclareDefining\endcsname
  [type=dox,␣prefix=\bslash,␣KVpref=#1,␣KVfam=#2]%
  \DeclareOptionX
}
```

An example:

```
\DeclareOptionX[Berg]<Lulu>{EvelynLear}{}
```

Check in the index for EvelynLear and \Berg@Lulu@EvelynLear. Now we set in the comment layer \DeclareDOXHead[Webern]{Lieder} and

ChneOelze
```
\DeclareOptionX<AntonW>{ChneOelze}
```

The latter example shows also overriding the option header by declaring the default. By the way, both the example options are not declared in the code actually.

Now the Heiko Oberdiek's kvoptions package option definitions:

\DeclareStringOption
\DeclareBoolOption
\DeclareComplementaryOption
\DeclareVoidOption
```
\DeclareDefining[type=kvo,␣prefix=\bslash,␣KVpref=]%
    \DeclareStringOption
\DeclareDefining[type=kvo,␣prefix=\bslash,␣KVpref=]%
    \DeclareBoolOption
\DeclareDefining[type=kvo,␣prefix=\bslash,␣KVpref=]%
    \DeclareComplementaryOption
\DeclareDefining[type=kvo,␣prefix=\bslash,␣KVpref=]%
    \DeclareVoidOption
```

The kvoptions option definitions allow setting the default family/prefix for all definitions forth so let's provide analogon:

```
\def\DeclareKVOFam#1{%
  \def\do##1{%
    \csname␣DeclareDefining\endcsname
    [type=kvo,␣prefix=\bslash,␣KVpref=,␣KVfam=#1]##1}%
  \do\DeclareStringOption
  \do\DeclareBoolOption
  \do\DeclareComplementaryOption
  \do\DeclareVoidOption
}
```

As a nice exercise I recommend to think why this list of declarations had to be preceded (in the comment layer) with \HideAllDefining and for which declarations of the above \DeclareDefining\DeclareDefining did not work. (The answers are commented out in the source file.)

One remark more: if you define (in the code) a new defining command (I did: a shorthand for `\DeclareOptionX[gmcc]<>`), declare it as defining (in the commentary) *after* it is defined. Otherwise its first occurence shall fire the detector and mark next cs or worse, shall make the detector expect some arguments that it won't find.

Suspending ('hiding') and resuming detection

Sometimes we want to suspend automatic detection of definitions. For `\def` we defined suspending and resuming declarations in the previous section. Now let's take care of detection more generally.

The next command has no arguments and suspends entire detection of definitions.

\HideAllDefining
```
\def\HideAllDefining{%
  \ifnumo=o\csname␣gmd@adef@allstored\endcsname
    \SMglobal\StoreMacro\gmd@detectors
    \global\@namedef{gmd@adef@allstored}{1}%
  \fi
  \global\emptify\gmd@detectors}% we make the carrier \empty not \relax
        to be able to declare new defining command in the scope of \HideAll...
```

The `\ResumeAllDefining` command takes no arguments and restores the meaning of the detectors' carrier stored with `\HideAllDefining`

\ResumeAllDefining
```
\def\ResumeAllDefining{%
  \ifnum1=o\csname␣gmd@adef@allstored\endcsname\relax
    \SMglobal\RestoreMacro\gmd@detectors
    \SMglobal\RestoreMacro\UnDef
    \global\@namedef{gmd@adef@allstored}{o}%
  \fi}
```

Note that `\ResumeAllDefining` discards the effect of any `\DeclareDefining` that could have occured between `\HideAllDefining` and itself.

The `\HideDefining` command takes one argument which should be a defining command (always without star). `\HideDefining` suspends detection of this command (also of its starred version) until `\ResumeDefining` of the same command or `\ResumeAllDefining`.

\HideDefining
```
\def\HideDefining{\begingroup
  \MakePrivateLetters
  \@ifstarl\Hide@DfngOnce\Hide@Dfng}
```

\Hide@Dfng
```
\def\Hide@Dfng#1{%
  \escapechar\m@ne
  \gn@melet{gmd@detect@\string#1}{relax}%
  \gn@melet{gmd@detect@\string#1*}{relax}%
  \ifx\def#1\global\relaxen\UnDef\fi
  \endgroup}
```

\Hide@DfngOnce
```
\def\Hide@DfngOnce#1{%
  \gmd@adef@selfrestore#1%
  \endgroup}
```

```
\def\gmd@adef@selfrestore#1{%
  \escapechar\m@ne
  \@ifundefined{gmd@detect@\string#1}{%
    \SMglobal\@xa\StoreMacro
    \csname␣gmd@detect@\string#1\endcsname}{}%
  \global\@nameedef{gmd@detect@\string#1}{%
```

```
      \@nx\ifx\@xa\@nx\csname␣gmd@detectname@\string#1\endcsname
      \@nx\macro@pname
      \def\@nx\next{% this \next will be executed in line 3745.
        \SMglobal\RestoreMacro␣% they both are \protected.
        \@xa\@nx\csname␣gmd@detect@\string#1\endcsname
        \@nx\gmd@charbychar}%
      \@nx\fi}% of \@nameedef.
}% of \gmd@adef@selfrestore.
```

The \ResumeDefining command takes a defining command as the argument and resumes its automatic detection. Note that it restores also the possibly undefined detectors of starred version of the argument but that is harmless I suppose until we have millions of cses.

\ResumeDefining
```
\def\ResumeDefining{\begingroup
  \MakePrivateLetters
  \gmd@ResumeDfng}
```

\gmd@ResumeDfng
```
\def\gmd@ResumeDfng#1{%
  \escapechar\m@ne
  \SMglobal\RestoreMacro*{gmd@detect@\string#1}%
  \SMglobal\RestoreMacro*{gmd@detect@\string#1*}%
  \endgroup}
```

Indexing of cses

The inner macro indexing macro. #1 is the \verb's delimiter; #2 is assumed to be the macro's name with MakeIndex-control chars quoted. #3 is a macro storing the $_{12}$ macro's name, usually \macro@pname, built with \stringing every char in lines 3563, 3583 and 3595. #3 is used only to test if the entry should be specially formatted.

\index@macro
```
\newcommand*\index@macro[3][\verbatimchar]{{%
    \@ifundefined{gmd/iexcl/#3}%
    {% #3 is not excluded from index
      \@ifundefined{gmd/defentry/#3}%
      {% #3 is not def entry
        \@ifundefined{gmd/usgentry/#3}%
        {% #3 is not usg entry
          \edef\kind@fentry{\CommonEntryCmd}}%
        {% #3 is usg entry
```
\kind@fentry
```
          \def\kind@fentry{UsgEntry}%
          \un@usgentryze{#3}}%
      }%
      {% #3 is def entry
```
\kind@fentry
```
        \def\kind@fentry{DefEntry}%
        \un@defentryze{#3}%
      }% of gmd/defentry/ test's 'else'
      \if@pageindex\@pageinclindexfalse\fi% should it be here or there? Definitely here because we'll wish to switch the switch with a declaration.
      \if@pageinclindex
        \edef\gmu@tempa{gmdindexpagecs{\HLPrefix}{\kind@fentry}{%
            \EntryPrefix}}%
      \else
        \edef\gmu@tempa{gmdindexrefcs{\HLPrefix}{\kind@fentry}{%
            \EntryPrefix}}%
```

```
      \fi
      \edef\gmu@tempa{\IndexPrefix#2\actualchar%
        \quotechar\bslash␣verb*#1\quoted@eschar#2#1% The last macro in
            this line usually means the first two, but in some cases it's redefined
            to be empty (when we use \index@macro to index not a cs).
        \encapchar\gmu@tempa}%
      \@xa\special@index\@xa{\gmu@tempa}% We give the indexing macro the
          argument expanded so that hyperref may see the explicit encapchar
          in order not to add its own encapsulation of |hyperpage when the
          (default) hyperindex=true option is in force. (After this setting the
          \edefs in the above may be changed to \defs.)
    }{}% closing of gmd/iexcl/ test.
    }}
\un@defentryze \def\un@defentryze#1{%
  \@xa\g@relaxen\csname␣gmd/defentry/#1\endcsname
  \ifx\gmd@detectors\empty
    \g@relaxen\last@defmark
  \fi}% the last macro (assuming \fi is not a macro :-) is only used by \changes. If
      we are in the scope of automatic detection of definitions, we want to be able
      not to use \Define but write \changes after a definition and get proper en-
      try. Note that in case of automatic detection of definitions \last@defmark's
      value keeps until the next definition.
\un@usgentryze \def\un@usgentryze#1{%
  \@xa\g@relaxen\csname␣gmd/usgentry/#1\endcsname}
\@emptify\EntryPrefix% this macro seems to be obsolete now (v0.98d).
```

For the case of page-indexing a macro in the commentary when codeline index option is on:

```
\if@pageinclindex \newif\if@pageinclindex
\quoted@eschar \newcommand*\quoted@eschar{\quotechar\bslash}% we'll redefine it when in-
      dexing an environment.
```

Let's initialize \IndexPrefix

```
\IndexPrefix \def\IndexPrefix{}
```

The \IndexPrefix and \HLPrefix ('HyperLabel Prefix') macros are given with account of a possibility of documenting several files in(to) one document. In such case the user may for each file \def\IndexPrefix{⟨*package name*⟩!} for instance and it will work as main level index entry and \def\HLPrefix{⟨*package name*⟩} as a prefix in hypertargets in the codelines. They are redefined by \DocInclude e.g.

```
\if@linesnotnum\@pageindextrue\fi
\AtBeginDocument{%
  \if@pageindex
\gmdindexrefcs   \def\gmdindexrefcs#1#2#3#4{\csname#2\endcsname{\hyperpage{%
          #4}}}% in the page case we gobble the third argument that is supposed
          to be the entry prefix.
    \let\gmdindexpagecs=\gmdindexrefcs
  \else
\gmdindexrefcs   \def␣\gmdindexrefcs#1#2#3#4{\gmiflink[clnum.#4]{%
        \csname#2\endcsname{#4}}}%
\gmdindexpagecs  \def␣\gmdindexpagecs#1#2#3#4{\hyperlink{page.#4}{%
        \csname#2\endcsname{\gmd@revprefix{#3}#4}}}%
```

```
\gmd@revprefix 4578     \def\gmd@revprefix#1{%
   \gmu@tempa  4579       \def\gmu@tempa{#1}%
               4580       \ifx\gmu@tempa\@empty␣p.\,\fi}
```

```
\HLPrefix   4582     \providecommand*\HLPrefix{}%
```
it'll be the hypertargets names' prefix in multi-docs. Moreover, it showed that if it was empty, hyperref saw duplicates of the hyper destinations, which was perfectly understandable (`codelinenum.123` made by `\refstepcounter` and `codelinenum.123` made by `\gmhypertarget`). But since v0.98 it is not a problem anymore because during the automatic `\hypertargeting` the lines are labeled `clnum.`⟨*number*⟩. When `\HLPrefix` was defined as dot, MakeIndex rejected the entries as 'illegal page number'.

```
            4594   \fi}
```

The definition is postponed till `\begin{document}` because of the `\PageIndex` declaration (added for doc-compatibility), see line 7410.

I design the index to contain hyperlinking numbers whether they are the line numbers or page numbers. In both cases the last parameter is the number, the one before the last is the name of a formatting macro and in linenumber case the first parameter is a prefix for proper reference in multi-doc.

I take account of three kinds of formatting the numbers: 1. the 'def' entry, 2. a 'usage' entry, 3. a common entry. As in doc, let them be underlined, italic and upright respectively.

```
\DefEntry   4609 \def\DefEntry#1{\underline{#1}}
\UsgEntry   4610 \def\UsgEntry#1{\textit{#1}}
```

The third option will be just `\relax` by default:

```
\CommonEntryCmd  4612 \def\CommonEntryCmd{relax}
```

In line 4489 it's `\edefed` to allow an 'unmöglich' situation that the user wants to have the common index entries specially formatted. I use this to make *all* the index entries of the driver part to be 'usage', see the source of chapter 641.

Now let's `\def` the macros declaring a cs to be indexed special way. Each declaration puts the $_{12}$ed name of the macro given it as the argument into proper macro to be `\ifx`ed in lines 4485 and 4487 respectively.

Now we are ready to define a couple of commands. The * versions of them are for marking environments and *implicit* cses.

```
\DefIndex   4628 \outer\def\DefIndex{\begingroup
            4629   \MakePrivateLetters
            4630   \@ifstarl{\MakePrivateOthers\Code@DefIndexStar}{%
                     \Code@DefIndex}}
```

```
\Code@DefIndex  4635 \long\def\Code@DefIndex#1{\endgroup{%
                4636   \escapechar\m@ne% because we will compare the macro's name with a string
                         without the backslash.
                4638   \@defentryze{#1}{1}}}
```

```
\Code@DefIndexStar  4642 \long\def\Code@DefIndexStar#1{%
                    4643   \endgroup
                    4644   \addto@estoindex{#1}%
                    4645   \@defentryze{#1}{o}}
```

```
\gmd@justadot  4647 \def\gmd@justadot{.}
```

```
\@defentryze   4649 \long\def\@defentryze#1#2{%
```

```
\@xa\glet\csname␣gmd/defentry/\string#1\endcsname%
      \gmd@justadot% The
      LaTeX \@namedef macro could not be used since it's not 'long'.
\last@defmark \xdef\last@defmark{\string#1}% we \string the argument just in case it's
      a control sequence. But when it can be a cs, we \@defentryze in a scope
      of \escapechar=-1, so there will never be a backslash at the beginning of
      \last@defmark's meaning (unless we \@defentryze \\).
\@xa\gdef\csname␣gmd/isaCS/\last@defmark\endcsname{#2}}% #2 is ei-
      ther 0 or 1. It is the information whether this entry is a cs or not.
\@usgentryze \long\def\@usgentryze#1{%
  \@xa\let\csname␣gmd/usgentry/\string#1\endcsname\gmd@justadot}
```

Initialize `\envirs@toindex`

```
\@emptify\envirs@toindex
```

Now we'll do the same for the 'usage' entries:

```
\CodeUsgIndex \outer\def\CodeUsgIndex{\begingroup
  \MakePrivateLetters
  \@ifstarl{\MakePrivateOthers\Code@UsgIndexStar}{%
      \Code@UsgIndex}}
```

The * possibility is for marking environments etc.

```
\Code@UsgIndex \long\def\Code@UsgIndex#1{\endgroup{%
    \escapechar\m@ne
    \global\@usgentryze{#1}}}
\Code@UsgIndexStar \long\def\Code@UsgIndexStar#1{%
  \endgroup
  \addto@estoindex{#1}%
  \@usgentryze{#1}}
```

For the symmetry, if we want to mark a control sequence or an environment's name to be indexed as a 'normal' entry, let's have:

```
\CodeCommonIndex \outer\def\CodeCommonIndex{\begingroup
  \MakePrivateLetters
  \@ifstarl{\MakePrivateOthers\Code@CommonIndexStar}{%
      \Code@CommonIndex}}
\Code@CommonIndex \long\def\Code@CommonIndex#1{\endgroup}
\Code@CommonIndexStar \long\def\Code@CommonIndexStar#1{%
  \endgroup\addto@estoindex{#1}}
```

And now let's define commands to index the control sequences and environments occurring in the narrative.

```
\text@indexmacro \long\def\text@indexmacro#1{%
  {\escapechar\m@ne␣\xdef\macro@pname{\xiistring#1}}%
  \@xa\quote@mname\macro@pname\relax% we process the cs's name char by
      char and quote MakeIndex controls. \relax is the iterating macro's stopper.
      The scanned cs's quoted name shall be the expansion of \macro@iname.
  \if\verbatimchar\macro@pname
\im@firstpar   \def\im@firstpar{[$]}%
\im@firstpar \else\def\im@firstpar{}%
  \fi
  {\do@properindex% see line 5048.
    \@xa␣\index@macro\im@firstpar\macro@iname\macro@pname}}
```

The macro defined below (and the next one) are executed only before a $_{12}$ macro's name i.e. a nonempty sequence of $_{12}$ character(s). This sequence is delimited (guarded) by \relax.

\quote@mname
\macro@iname
```
\def\quote@mname{%
  \def\macro@iname{}%
  \quote@charbychar}
```

\quote@charbychar
```
\def\quote@charbychar#1{%
  \if\relax#1% finish quoting when you meet \relax or:
  \else
    \quote@char#1%
    \xdef\macro@iname{\macro@iname␣\gmd@maybequote#1}%
    \afterfi\quote@charbychar
  \fi}
```

The next command will take one argument, which in plain version should be a control sequence and in the starred version also a sequence of chars allowed in environment names or made other by \MakePrivateOthers macro, taken in the curly braces.

\TextUsgIndex
```
\def\TextUsgIndex{\begingroup
  \MakePrivateLetters
  \@ifstarl{\MakePrivateOthers\Text@UsgIndexStar}{%
       \Text@UsgIndex}}
```

\Text@UsgIndex
```
\long\def\Text@UsgIndex#1{%
  \endgroup\@usgentryze#1%
  \text@indexmacro#1}
```

\Text@UsgIndexStar
```
\long\def\Text@UsgIndexStar#1{\endgroup\@usgentryze{#1}%
  \text@indexenvir{#1}}
```

\text@indexenvir
```
\long\def␣\text@indexenvir#1{%
  \edef\macro@pname{\xiistring#1}%
  \if\bslash\@xa\@firstofmany\macro@pname\@@nil% if \stringed #1 be-
       gins with a backslash, we will gobble it to make MakeIndex not see it.
    \edef\gmu@tempa{\@xa\@gobble\macro@pname}%
    \@tempswatrue
  \else
    \let\gmu@tempa\macro@pname
    \@tempswafalse
  \fi
  \@xa\quote@mname\gmu@tempa\relax% we process \stinged #1 char by char
       and quote MakeIndex controls. \relax is the iterating macro's stopper. The
       quoted \stringed #1 shall be the meaning of \macro@iname.
  {\if@tempswa
```

\quoted@eschar
```
    \def\quoted@eschar{\quotechar\bslash}%
    \else\@emptify\quoted@eschar\fi% we won't print any backslash before
         an environment's name, but we will before a cs's name.
    \do@properindex% see line 5048.
    \index@macro\macro@iname\macro@pname}}
```

\TextCommonIndex
```
\def\TextCommonIndex{\begingroup
  \MakePrivateLetters
  \@ifstarl{\MakePrivateOthers\Text@CommonIndexStar}{%
       \Text@CommonIndex}}
```

\Text@CommonIndex
```
\long\def\Text@CommonIndex#1{\endgroup
```

```
    \text@indexmacro#1}
\Text@CommonIndexStar
\long\def\Text@CommonIndexStar#1{\endgroup
    \text@indexenvir{#1}}
```

As you see in the lines 4496 and 4492, the markers of special formatting are reset after first use.

But we wish the cses not only to be indexed special way but also to be put in marginpars. So:

```
\CodeMarginize
\outer\def\CodeMarginize{\begingroup
    \MakePrivateLetters
    \@ifstarl
      {\MakePrivateOthers\egCode@MarginizeEnvir}
      {\egCode@MarginizeMacro}}
```

One more expansion level because we wish `\Code@MarginizeMacro` not to begin with `\endgroup` because in the subsequent macros it's used *after* ending the re`\catcode`ing group.

```
\egCode@MarginizeMacro
\long\def\egCode@MarginizeMacro#1{\endgroup
    \Code@MarginizeMacro#1}
\Code@MarginizeMacro
\long\def\Code@MarginizeMacro#1{{\escapechar\m@ne
      \@xa\glet\csname␣gmd/2marpar/\string#1\endcsname\gmd@justadot
    }}
\egCode@MarginizeEnvir
\long\def\egCode@MarginizeEnvir#1{\endgroup
    \Code@MarginizeEnvir{#1}}
\Code@MarginizeEnvir
\long\def\Code@MarginizeEnvir#1{\addto@estomarginpar{#1}}
```

And a macro really putting the environment's name in a marginpar shall be trigged at the beginning of the nearest codeline.

Here it is:

```
\mark@envir
\def\mark@envir{%
    \ifx\envirs@tomarginpar\@empty
    \else
      \let\do\Text@Marginize
      \envirs@tomarginpar%
      \g@emptify\envirs@tomarginpar%
    \fi
    \ifx\envirs@toindex\@empty
    \else
      \gmd@doindexingtext
      \envirs@toindex
      \g@emptify\envirs@toindex%
    \fi}
\gmd@doindexingtext
\def\gmd@doindexingtext{%
    \def\do##1{% the \envirs@toindex list contains \stringed macros or environments' names in braces and each preceded with \do. We extract the definition because we use it also in line 4219.
      \if\bslash\@firstofmany##1\@@nil% if ##1 begins with a backslash, we will gobble it for MakeIndex not see it.
      \edef\gmd@resa{\@gobble##1}%
      \@tempswatrue
      \else
```

```
      \edef\gmd@resa{##1}\@tempswafalse
      \fi
      \@xa\quote@mname\gmd@resa\relax% see line 4757 & subs. for commentary.
      {\if@tempswa
\quoted@eschar        \def\quoted@eschar{\quotechar\bslash}%
        \else\@emptify\quoted@eschar\fi
        \index@macro\macro@iname{##1}}}%
}
```

One very important thing: initialisation of the list macros:

```
\@emptify\envirs@tomarginpar
\@emptify\envirs@toindex
```

For convenience we'll make the 'private letters' first not to bother ourselves with `\makeatletter` for instance when we want mark some cs. And `\MakePrivateOthers` for the environment and other string case.

```
\Define \outer\def\Define{\begingroup
  \MakePrivateLetters
```

We do `\MakePrivateLetters` before `\@ifstarl` in order to avoid a situation that TEX sees a control sequence with improper name (another cs than we wished) (because `\@ifstarl` establishes the `\catcodes` for the next token):

```
  \@ifstarl{\MakePrivateOthers\Code@DefEnvir}{\Code@DefMacro}}
```

```
\CodeUsage \outer\def\CodeUsage{\begingroup
  \MakePrivateLetters
  \@ifstarl{\MakePrivateOthers\Code@UsgEnvir}{\Code@UsgMacro}}
```

And then we launch the macros that close the group and do the work.

```
\Code@DefMacro \long\def\Code@DefMacro#1{%
  \Code@DefIndex#1% we use the internal macro; it'll close the group.
  \Code@MarginizeMacro#1}
```

```
\Code@UsgMacro \long\def\Code@UsgMacro#1{%
  \Code@UsgIndex#1% here also the internal macro; it'll close the group
  \Code@MarginizeMacro#1}
```

The next macro is taken verbatim ;-) from doc and the subsequent `\lets`, too.

```
\codeline@wrindex \def\codeline@wrindex#1{\if@filesw
  \immediate\write\@indexfile
  {\string\indexentry{#1}%
    {\HLPrefix\number\c@codelinenum}}\fi}
```

```
\codeline@glossary \def\codeline@glossary#1{% It doesn't need to establish a group since it is always called in a group.
  \if@pageinclindex
    \edef\gmu@tempa{gmdindexpagecs{\HLPrefix}{relax}{%
        \EntryPrefix}}%
  \else
    \edef\gmu@tempa{gmdindexrefcs{\HLPrefix}{relax}{%
        \EntryPrefix}}% relax stands for the formatting command. But we don't want to do anything special with the change history entries.
  \fi
  \protected@edef\gmu@tempa{%
    \@nx\protected@write\@nx\@glossaryfile{}%
    {\string\glossaryentry{#1\encapchar\gmu@tempa}%
```

```
    {\HLPrefix\number\c@codelinenum}}%
  \gmu@tempa
}
```

We initialize it due to the option (or lack of the option):

```
\AtBeginDocument{%
  \if@pageindex
    \let\special@index=\index
    \let\gmd@glossary\glossary
  \else
    \let\special@index=\codeline@wrindex
    \let\gmd@glossary\codeline@glossary
  \fi}% postponed till \begin{document} with respect of doc-like declarations.
```

And in case we don't want to index:

\gag@index
```
\def\gag@index{\let\index=\@gobble
  \let\codeline@wrindex=\@gobble}
```

We'll use it in one more place or two. And we'll wish to be able to undo it so let's copy the original meanings:

```
\StoreMacros{\index\codeline@wrindex}
```

\ungag@index
```
\def\ungag@index{\RestoreMacros{\index\@@codeline@wrindex}}
```

Our next task is to define macros that'll mark and index an environment or other string in the code. Because of lack of a backslash, no environment's name is scanned so we have to proceed different way. But we wish the user to have symmetric tools, i.e., the 'def' or 'usage' use of an environment should be declared before the line where the environment occurs. Note the slight difference between these and the commands to declare a cs marking: the latter do not require to be used *immediately* before the line containig the cs to be marked. We separate indexing from marginizing to leave a possibility of doing only one of those things.

\Code@DefEnvir
```
\long\def\Code@DefEnvir#1{%
  \endgroup
  \addto@estomarginpar{#1}%
  \addto@estoindex{#1}%
  \@defentryze{#1}{o}}
```

\Code@UsgEnvir
```
\long\def\Code@UsgEnvir#1{%
  \endgroup
  \addto@estomarginpar{#1}%
  \addto@estoindex{#1}%
  \@usgentryze{#1}}
```

\addto@estomarginpar
```
\long\def\addto@estomarginpar#1{%
  \edef\gmu@tempa{\@nx\do{\xiistring#1}}% we \string the argument to allow it to be a control sequence.
  \@xa\addtomacro\@xa\envirs@tomarginpar\@xa{\gmu@tempa}}
```

\addto@estoindex
```
\long\def\addto@estoindex#1{%
  \edef\gmu@tempa{\@nx\do{\xiistring#1}}
  \@xa\addtomacro\@xa\envirs@toindex\@xa{\gmu@tempa}}
```

And now a command to mark a 'usage' occurrence of a cs, environment or another string in the commentary. As the 'code' commands this also has plain and starred version, first for cses appearing explicitly and the latter for the strings and cses appearing implicitly.

\TextUsage
```
\def\TextUsage{\begingroup
  \MakePrivateLetters
  \@ifstarl{\MakePrivateOthers\Text@UsgEnvir}{\Text@UsgMacro}}
```
\Text@UsgMacro
```
\long\def\Text@UsgMacro#1{%
  \endgroup{\tt\xiistring#1}%
  \Text@Marginize#1%
  \begingroup\Code@UsgIndex#1% we declare the kind of formatting of the entry.
  \text@indexmacro#1}
```
\Text@UsgEnvir
```
\long\def\Text@UsgEnvir#1{%
  \endgroup{\tt\xiistring#1}%
  \Text@Marginize{#1}%
  \@usgentryze{#1}% we declare the 'usage' kind of formatting of the entry and
        index the sequence #1.
  \text@indexenvir{#1}}
```

We don't provide commands to mark a macro's or environment's definition present within the narrative because we think there won't be any: one defines macros and environments in the code not in the commentary.

\TextMarginize
```
\def\TextMarginize{\begingroup
  \MakePrivateLetters
  \@ifstarl{\MakePrivateOthers\egText@Marginize}{%
       \egText@Marginize}}
```
\egText@Marginize
```
\long\def\egText@Marginize#1{\endgroup
  \Text@Marginize#1}
```

We check whether the margin pars are enabled and proceed respectively in either case.

```
\if@marginparsused
  \reversemarginpar
  \marginparpush\z@
  \marginparwidth8pc\relax
```

You may wish to put not only macros and environments to a marginpar.

\gmdmarginpar
```
  \long\def\gmdmarginpar#1{%
    \marginpar{\raggedleft\strut
      \hskipoptplus1ooptminus1oopt%
      #1}}%
```
```
\else
```
\gmdmarginpar
```
  \long\def\gmdmarginpar#1{}%
\fi
```
\Text@Marginize
```
\long\def\Text@Marginize#1{%
  \gmdmarginpar{\marginpartt\xiistring#1}}
```

Note that the above macro will just gobble its argument if the marginpars are disabled.

It may be advisable to choose a condensed typewriter font for the marginpars, if there is any. (The Latin Modern font family provides a light condensed typewriter font, it's set in gmdocc class.)

```
\let\marginpartt\tt
```

If we pront also the narration lines' numbers, then the index entries for cses and environments marked in the commentary should have codeline numbers not page numbers and that is `\let` in line 4919. On the other hand, if we don't print narration lines'

numbers, then a macro or an environment marked in the commentary should have page number not codeline number. This we declare here, among others we add the letter p before the page number.

\do@properindex
```
\def\do@properindex{%
  \if@printalllinenos\else
    \@pageinclindextrue
    \let\special@index=\index
  \fi}
```

In doc all the 'working' TEX code should be braced in(to) the `macrocode` environments. Here another solutions are taken so to be doc-compatible we only should nearly-ignore `macrocode(*)`s with their Percent and The Four Spaces Preceding ;-). I.e., to ensure the line ends are 'queer'. And that the DocStrip directives will be typeset as the DocStrip directives. And that the usual code escape char will be restored at `\end{%macrocode}`. And to add the vertical spaces.

If you know doc conventions, note that gmdoc *does not* require `\end{macrocode}` to be preceded with any particular number of any char :-).

macrocode*
```
\newenvironment*{macrocode*}{%
  \if@codeskipput\else\par\addvspace\CodeTopsep%
       \@codeskipputgtrue\fi
  \QueerEOL}%
  {\par\addvspace\CodeTopsep\CodeEscapeChar\\}
```

Let's remind that the starred version makes ␣ visible, which is the default in gmdoc outside `macrocode`.

So we should make the spaces *invisible* for the unstarred version.

macrocode
```
\newenvironment*{macrocode}{%
  \if@codeskipput\else\par\addvspace\CodeTopsep%
       \@codeskipputgtrue\fi
  \QueerEOL}%
  {\par\addvspace\CodeTopsep\CodeEscapeChar\\}
```

Note that at the end of both the above environments the \'s rôle as the code escape char is restored. This is crafted for the `\SpecialEscapechar` macro's compatibility: this macro influences only the first `macrocode` environment. The situation that the user wants some queer escape char in general and in a particular `macrocode` yet another seems to me "unmöglich, Prinzessin"[8].

Since the first .dtx I tried to compile after the first published version of gmdoc uses a lot of commented out code in `macrocodes`, it seems to me necessary to add a possibility to typeset `macrocodes` as if they were a kind of `verbatim`, that is to leave the code layer and narration layer philosophy.

oldmc
```
\let\oldmc\macrocode
\let\endoldmc\endmacrocode
```
oldmc*
```
\n@melet{oldmc*}{macrocode*}
\n@melet{endoldmc*}{endmacrocode*}
```

Now we arm `oldmc` and `olmc*` with the macro looking for %␣␣␣`\end{`⟨*envir name*⟩`}`.

```
\addtomacro\oldmc{\@oldmacrocode@launch}%
\@xa\addtomacro\csname␣oldmc*\endcsname{%
  \@oldmacrocode@launch}
```

\@oldmacrocode@launch
```
\def\@oldmacrocode@launch{%
```

[8] Richard Strauss after Oscar Wilde, *Salome*.

```
    \emptify\gmd@textEOL% to disable it in \gmd@docstripdirective launched
        within the code.
    \gmd@ctallsetup
    \glet\stored@code@delim\code@delim
    \@makeother\^^B\CodeDelim\^^B%
    \ttverbatim␣\gmd@DoTeXCodeSpace%
    \@makeother\|% because \ttverbatim doesn't do that.
    \MakePrivateLetters% see line 3518.
    \docstrips@percent␣\@makeother\>%
```

sine qua non of the automatic delimiting is replacing possible $*_{12}$in the environment's name with $*_{11}$. Not to complicate assume * may occur at most once and only at the end. We also assume the environment's name consists only of character tokens whose catcodes (except of *) will be the same in the verbatim text.

```
    \@xa\gmd@currenvxistar\@currenvir*\relax
    \@oldmacrocode}
\foone{\catcode`*11␣}
\gm@xistar {\def\gm@xistar{*}}
\gmd@currenvxistar \def\gmd@currenvxistar#1*#2\relax{%
    \edef\@currenvir{#1\if*#2\gm@xistar\fi}}
```

The trick is that #2 may be either $*_{12}$ or empty. If it's *, the test is satisfied and \if...\fi expands to \gm@xistar. If #2 is empty, the test is also satisfied since \gm@xistar expands to * but there's nothing to expand to. So, if the environment's name ends with $*_{12}$, it'll be substituted with $*_{11}$or else nothing will be added. (Note that a * not at the end of env. name would cause a disaster.)

```
\foone{%
\catcode`[=1␣\catcode`]=2
\catcode`\{=\active␣\@makeother\}
\@makeother\^^B
\catcode`/=0␣\catcode`\\=\active
\catcode`&=14␣\catcode`*=11
\catcode`\%=\active␣\obeyspaces}&␣%
[& here the \foone's second pseudo-argument begins
\@oldmacrocode /def/@oldmacrocode[&
/bgroup/let␣=/relax& to avoid writing /@nx␣ four times.
/xdef/oldmc@def[&
/def/@nx/oldmc@end####1/@nx%␣␣␣␣/@nx\end&
/@nx{/@currenvir}[&
####1^^B/@nx/end[/@currenvir]/@nx/gmd@oldmcfinis]]&
/egroup& now \oldmc@edef is defined to have one parameter delimited with
      \end{⟨current env.'s name⟩}
/oldmc@def&
/oldmc@end]&
]
\def\gmd@oldmcfinis{%
  \@xa\CodeDelim\stored@code@delim
  \gmd@mchook}% see line 7165
\def\OldMacrocodes{%
  \let\macrocode\oldmc
  \n@melet{macrocode*}{oldmc*}}
```

To handle DocStrip directives in the code (in the old macrocodes case that is).

```
\foone{\catcode`\%\active}
{\def\docstrips@percent{\catcode`\%\active
    \let%\gmd@codecheckifds}}
```

The point is, the active % will be expanded when just after it is the `\gmd@charbychar` cs token and next is some char, the `^^B` code delimiter at least. So, if that char is <, we wish to launch DocStrip directive typesetting. (Thanks to `\ttverbatim` all the < are 'other'.)

\gmd@codecheckifds
```
\def\gmd@codecheckifds#1#2{% note that #1 is just to gobble \gmd@charbychar token.
  \if@dsdir\@dsdirgfalse
    \if\@nx<\@nx#2\afterfifi\gmd@docstripdirective
    \else\afterfifi{\xiipercent#1#2}%
    \fi
  \else\afterfi{\xiipercent#1#2}%
  \fi}
```

macro

Almost the same we do with the `macro(*)` environments, stating only their argument to be processed as the 'def' entry. Of course, we should re`\catcode` it first.

macro
```
\newenvironment{macro}{%
  \@tempskipa=\MacroTopsep
  \if@codeskipput\advance\@tempskipa␣by-\CodeTopsep\fi
  \par\addvspace{\@tempskipa}\@codeskipputgtrue
  \begingroup\MakePrivateLetters\MakePrivateOthers% we make also the 'private others' to cover the case of other sequence in the argument. (We'll use the \macro macro also in the environment for describing and defining environments.)
  \gmd@ifonetoken\Hybrid@DefMacro\Hybrid@DefEnvir}%
  {\par\addvspace\MacroTopsep\@codeskipputgtrue}
```

It came out that the doc's author(s) give the `macro` environment also starred versions of commands as argument. It's OK since (the default version of) `\MakePrivateLetters` makes * a letter and therefore such a starred version is just one cs. However, in doc.dtx occur `macro`s that mark *implicit* definitions i.e., such that the defined cs is not scanned in the subsequent code.

macro*

And for those who want to to use this environment for marking implicit definitions, define the star version:

```
\@namedef{macro*}{\let\gmd@ifonetoken\@secondoftwo\macro}
\@xa\let\csname␣endmacro*\endcsname\endmacro
```

Note that `macro` and `macro*` have the same effect for more-than-one-token arguments thanks to `\gmd@ifonetoken`'s meaning inside unstarred `macro` (it checks whether the argument is one-token and if it isn't, `\gmd@ifonetoken` switches execution to 'other sequence' path).

The two environments behave different only with a one-token argument: `macro` postpones indexing it till the first scanned occurrence while `macro*` till the first code line met.

Now, let's complete the details. First define an `\if`-like macro that turns true when the string given to it consists of just one token (or one {⟨*text*⟩}, to tell the whole truth).

\gmd@ifsingle \gmu@tempa
```
\def\gmd@ifsingle#1#2\@@nil{%
  \def\gmu@tempa{#2}%
```

```
  \ifx\gmu@tempa\@empty}
```

Note it expands to an open `\if...` test (unbalanced with `\fi`) so it has to be used as all the `\if`s, with optional `\else` and obligatory `\fi`. And cannot be used in the possibly skipped branches of other `\if...`s (then it would result with 'extra `\fi`/extra `\else`' errors). But the below usage is safe since both `\gmd@ifsingle` and its `\else` and `\fi` are hidden in a macro (that will not be `\expandaftered`).

Note also that giving `\gmd@ifsingle` an `\if...` or so as the first token of the argument will not confuse TEX since the first token is just gobbled. The possibility of occurrence of `\if...` or so as a not-first token seems to be negligible.

\gmd@ifonetoken
\gmu@tempb

```
\def\gmd@ifonetoken#1#2#3{%
  \def\gmu@tempb{#3}% We hide #3 from TeX in case it's \if... or
       so. \gmu@tempa is used in \gmd@ifsingle.
  \gmd@ifsingle#3\@@nil
    \afterfi{\@xa#1\gmu@tempb}%
  \else
    \edef\gmu@tempa{\@xa\string\gmu@tempb}%
    \afterfi{\@xa#2\@xa{\gmu@tempa}}%
  \fi}
```

Now, define the mysterious `\Hybrid@DefMacro` and `\Hybrid@DefEnvir` macros. They mark their argument with a certain subtlety: they put it in a marginpar at the point where they are and postpone indexing it till the first scanned occurrence or just the first code line met.

\Hybrid@DefMacro

```
\long\def\Hybrid@DefMacro#1{%
  \Code@DefIndex{#1}% this macro closes the group opened by \macro.
  \Text@MarginizeNext{#1}}
```

\Hybrid@DefEnvir

```
\long\def\Hybrid@DefEnvir#1{%
  \Code@DefIndexStar{#1}% this macro also closes the group begun by \macro.
  \Text@MarginizeNext{#1}}
```

\Text@MarginizeNext

```
\long\def\Text@MarginizeNext#1{%
  \gmd@evpaddonce{\Text@Marginize{#1}\ignorespaces}}
```

The following macro adds its argument to `\everypar` using an auxiliary macro to wrap the stuff in. The auxiliary macro has a self-destructor built in so it `\relax`es itself after first use.

\gmd@evpaddonce

```
\long\def\gmd@evpaddonce#1{%
  \global\advance\gmd@oncenum\@ne
  \@xa\long\@xa\edef%
    \csname␣gmd/evp/NeuroOncer\the\gmd@oncenum\endcsname{%
      \@nx\g@relaxen
      \csname␣gmd/evp/NeuroOncer\the\gmd@oncenum\endcsname}% Why
           does it work despite it shouldn't? Because when the cs got
           with \csname...\endcsname is undefined, it's equivalent \relax
           and therefore unexpandable. That's why it passes \edef and is able
           to be assigned.
  \@xa\addtomacro\csname␣gmd/evp/NeuroOncer\the\gmd@oncenum%
       \endcsname{#1}%
  \@xa\addto@hook\@xa\everypar\@xa{%
    \csname␣gmd/evp/NeuroOncer\the\gmd@oncenum\endcsname}%
}
```

\gmd@oncenum

```
\newcount\gmd@oncenum
```

environment

Wrapping a description and definition of an environment in a `macro` environment would look inappropriate ('zgrzytało by' in Polish) although there's no TEXnical obstacle to do so. Therefore we define the `environment`, because of æ sthetic and psychological reasons.

```
\@xa\let\@xa\environment\csname␣macro*\endcsname
\@xa\let\@xa\endenvironment\csname␣endmacro*\endcsname
```

Index exclude list

We want some cses not to be indexed, e.g., the LATEX internals and TEX primitives.

doc takes `\index@excludelist` to be a `\toks` register to store the list of expelled cses. Here we'll deal another way. For each cs to be excluded we'll make (`\let`, to be precise) a control sequence and then we'll be checking if it's undefined (`\ifx`-equivalent `\relax`).[9]

\DoNotIndex
```
\def\DoNotIndex{\bgroup\MakePrivateLetters\DoNot@Index}
```

\DoNot@Index
```
\long\def\DoNot@Index#1{\egroup% we close the group,
  \let\gmd@iedir\gmd@justadot% we declare the direction of the cluding to be
      ex cluding. We act this way to be able to reverse the exclusions easily later.
  \dont@index#1.}
```

\dont@index \gmu@tempa
```
\long\def\dont@index#1{%
  \def\gmu@tempa{\@nx#1}% My TEX Guru's trick to deal with \fi and such, i.e.,
      to hide from TEX when it is processing a test's branch without expanding.
  \if\gmu@tempa.% a dot finishes expelling
  \else
    \if\gmu@tempa,% The list this macro is put before may contain commas and
        that's O.K., we just continue the work.
      \afterfifi\dont@index
    \else% what is else shall off the Index be expelled.
      {\escapechar\m@ne
        \xdef\gmu@tempa{\string#1}}%
      \@xa\let%
      \csname␣gmd/iexcl/\gmu@tempa\endcsname=\gmd@iedir% In the default
          case explained e.g. by the macro's name, the last macro's meaning is
          such that the test in line 4483 will turn false and the subject cs shall not
          be indexed. We \let not \def to spare TEX's memory.
      \afterfifi\dont@index
    \fi
  \fi}
```

Let's now give the exclude list copied ~verbatim ;-) from doc.dtx. I give it in the code layer because I suppose one will document not LATEX source but normal packages.

```
\DoNotIndex\{ \DoNotIndex\}% the index entries of these two cses would be re-
    jected by MakeIndex anyway.
\begin{MakePrivateLetters}% Yes, \DoNotIndex does \MakePrivateLetters
    on its own but No, it won't have any effect if it's given in another macro's \def.
```

\DefaultIndexExclusions
```
  \gdef\DefaultIndexExclusions{%
    \DoNotIndex{\@ \@@par \@beginparpenalty \@empty}%
    \DoNotIndex{\@flushglue \@gobble \@input}%
    \DoNotIndex{\@makefnmark \@makeother \@maketitle}%
    \DoNotIndex{\@namedef \@ne \@spaces \@tempa}%
```

[9] This idea comes from Marcin Woliński.

```
\DoNotIndex{\@tempb \@tempswafalse \@tempswatrue}%
\DoNotIndex{\@thanks \@thefnmark \@topnum}%
\DoNotIndex{\@@ \@elt \@forloop \@fortmp \@gtempa
    \@totalleftmargin}%
\DoNotIndex{\" \/ \@ifundefined \@nil \@verbatim \@vobeyspaces}%
\DoNotIndex{\| \~ \ \active \advance \aftergroup \begingroup
    \bgroup}%
\DoNotIndex{\mathcal \csname \def \documentstyle \dospecials
    \edef}%
\DoNotIndex{\egroup}%
\DoNotIndex{\else \endcsname \endgroup \endinput \endtrivlist}%
\DoNotIndex{\expandafter \fi \fnsymbol \futurelet \gdef \global}%
\DoNotIndex{\hbox \hss \if \if@inlabel \if@tempswa
    \if@twocolumn}%
\DoNotIndex{\ifcase}%
\DoNotIndex{\ifcat \iffalse \ifx \ignorespaces \index \input
    \item}%
\DoNotIndex{\jobname \kern \leavevmode \leftskip \let \llap
    \lower}%
\DoNotIndex{\m@ne \next \newpage \nobreak \noexpand
    \nonfrenchspacing}%
\DoNotIndex{\obeylines \or \protect \raggedleft \rightskip \rm
    \sc}%
\DoNotIndex{\setbox \setcounter \small \space \string \strut}%
\DoNotIndex{\strutbox}%
\DoNotIndex{\thefootnote \thispagestyle \topmargin \trivlist
    \tt}%
\DoNotIndex{\twocolumn \typeout \vss \vtop \xdef \z@}%
\DoNotIndex{\, \@bsphack \@esphack \@noligs \@vobeyspaces
    \@xverbatim}%
\DoNotIndex{\` \catcode \end \escapechar \frenchspacing
    \glossary}%
\DoNotIndex{\hangindent \hfil \hfill \hskip \hspace \ht \it
    \langle}%
\DoNotIndex{\leaders \long \makelabel \marginpar \markboth
    \mathcode}%
\DoNotIndex{\mathsurround \mbox}%% \newcount \newdimen \newskip
\DoNotIndex{\nopagebreak}%
\DoNotIndex{\parfillskip \parindent \parskip \penalty \raise
    \rangle}%
\DoNotIndex{\section \setlength \TeX \topsep \underline \unskip}%
\DoNotIndex{\vskip \vspace \widetilde \\ \% \@date \@defpar}%
\DoNotIndex{\[ \]}% see line 5386.
\DoNotIndex{\count@ \ifnum \loop \today \uppercase \uccode}%
\DoNotIndex{\baselineskip \begin \tw@}%
\DoNotIndex{\a \b \c \d \e \f \g \h \i \j \k \l \m \n \o \p \q}%
\DoNotIndex{\r \s \t \u \v \w \x \y \z \A \B \C \D \E \F \G \H}%
\DoNotIndex{\I \J \K \L \M \N \O \P \Q \R \S \T \U \V \W \X \Y \Z}%
\DoNotIndex{\1 \2 \3 \4 \5 \6 \7 \8 \9 \0}%
\DoNotIndex{\! \# \$ \& \' \( \) \. \: \; \< \= \> \? \_}% \+ seems to be
    so rarely used that it may be advisable to index it.
\DoNotIndex{\discretionary \immediate \makeatletter
    \makeatother}%
```

```
\DoNotIndex{\meaning\newenvironment\par\relax
    \renewenvironment}%
\DoNotIndex{\repeat\scriptsize\selectfont\the\undefined}%
\DoNotIndex{\arabic\do\makeindex\null\number\show\write
    \@ehc}%
\DoNotIndex{\@author\@ehc\@ifstar\@sanitize\@title}%
\DoNotIndex{\if@minipage\if@restonecol\ifeof\ifmmode}%
\DoNotIndex{\lccode\%\%\newtoks
  \onecolumn\openin\p@\SelfDocumenting}%
\DoNotIndex{\settowidth\@resetonecoltrue\@resetonecolfalse
    \bf}%
\DoNotIndex{\clearpage\closein\lowercase\@inlabelfalse}%
\DoNotIndex{\selectfont\mathcode\newmathalphabet\rmdefault}%
\DoNotIndex{\bfdefault}%
```

From the above list I removed some `\new...` declarations because I think it may be useful to see gathered the special `\new...s` of each kind. For the same reason I would not recommend excluding from the index such declarations as `\AtBeginDocument`, `\AtEndDocument`, `\AtEndOfPackage`, `\DeclareOption`, `\DeclareRobustCommand` etc. But the common definitions, such as `\new/providecommand` and `\(e/g/x)defs`, as the most common, in my opinion excluded should be.

And some my exclusions:

```
\DoNotIndex{\@@input\@auxout\@currentlabel\@dblarg}%
\DoNotIndex{\@ifdefinable\@ifnextchar\@ifpackageloaded}%
\DoNotIndex{\@indexfile\@let@token\@sptoken\^}% the latter comes
    from cses like \^^M, see sec. 668.
\DoNotIndex{\addto@hook\addvspace}%
\DoNotIndex{\CurrentOption}%
\DoNotIndex{\emph\empty\firstofone}%
\DoNotIndex{\font\fontdimen\hangindent\hangafter}%
\DoNotIndex{\hyperpage\hyperlink\hypertarget}%
\DoNotIndex{\ifdim\ifhmode\iftrue\ifvmode\medskipamount}%
\DoNotIndex{\message}%
\DoNotIndex{\NeedsTeXFormat\newcommand\newif}%
\DoNotIndex{\newlabel}%
\DoNotIndex{\of}%
\DoNotIndex{\phantom\ProcessOptions\protected@edef}%
\DoNotIndex{\protected@xdef\protected@write}%
\DoNotIndex{\ProvidesPackage\providecommand}%
\DoNotIndex{\raggedright}%
\DoNotIndex{\raisebox\refstepcounter\ref\rlap}%
\DoNotIndex{\reserved@a\reserved@b\reserved@c\reserved@d}%
\DoNotIndex{\stepcounter\subsection\textit\textsf\thepage
    \tiny}%
\DoNotIndex{\copyright\footnote\label\LaTeX}%
\DoNotIndex{\@eha\@endparenv\if@endpe\@endpefalse
    \@endpetrue}%
\DoNotIndex{\@evenfoot\@oddfoot\@firstoftwo\@secondoftwo}%
\DoNotIndex{\@for\@gobbletwo\@idxitem\@ifclassloaded}%
\DoNotIndex{\@ignorefalse\@ignoretrue\if@ignore}%
\DoNotIndex{\@input@\@input}%
\DoNotIndex{\@latex@error\@mainaux\@nameuse}%
```

```
      \DoNotIndex{\@nomath \@oddfoot}% %\@onlypreamble should be indexed
          IMO.
      \DoNotIndex{\@outerparskip \@partaux \@partlist \@plus}%
      \DoNotIndex{\@sverb \@sxverbatim}%
      \DoNotIndex{\@tempcnta \@tempcntb \@tempskipa \@tempskipb}%
          I think the layout parameters even the kernel, should not be excluded:
          % \@topsep \@topsepadd  \abovedisplayskip \clubpenalty etc.
      \DoNotIndex{\@writeckpt}%
      \DoNotIndex{\bfseries \chapter \part \section \subsection}%
      \DoNotIndex{\subsubsection}%
      \DoNotIndex{\char \check@mathfonts \closeout}%
      \DoNotIndex{\fontsize \footnotemark \footnotetext
          \footnotesize}%
      \DoNotIndex{\g@addto@macro \hfilneg \Huge \huge}%
      \DoNotIndex{\hyphenchar \if@partsw \IfFileExists }%
      \DoNotIndex{\include \includeonly \indexspace}%
      \DoNotIndex{\itshape \language \LARGE \Large \large}%
      \DoNotIndex{\lastbox \lastskip \m@th \makeglossary}%
      \DoNotIndex{\maketitle \math@fontsfalse \math@fontstrue
          \mathsf}%
      \DoNotIndex{\MessageBreak \noindent \normalfont \normalsize}%
      \DoNotIndex{\on@line \openout \outer}%
      \DoNotIndex{\parbox \part \rmfamily \rule \sbox}%
      \DoNotIndex{\sf@size \sffamily \skip}%
      \DoNotIndex{\textsc \textup \toks@ \ttfamily \vbox}%
 %%␣\DoNotIndex{\begin*} maybe in the future, if the idea gets popular…
      \DoNotIndex{\hspace* \newcommand* \newenvironment*
          \providecommand*}%
      \DoNotIndex{\renewenvironment* \section* \chapter*}%
  }% of \DefaultIndexExclusions.
```

I put all the expellings into a macro because I want them to be optional.

```
\end{MakePrivateLetters}
```

And we execute it due to the (lack of) counter-corresponding option:

```
\if@indexallmacros\else
  \DefaultIndexExclusions
\fi
```

If we expelled so many cses, someone may like it in general but he/she may need one or two expelled to be indexed back. So

\DoIndex
```
\def\DoIndex{\bgroup\MakePrivateLetters\Do@Index}
```

\Do@Index
```
\long\def\Do@Index#1{\egroup\@relaxen\gmd@iedir\dont@index#1.}%
```
note we only redefine an auxiliary cs and launch also \dont@index inner macro.

And if a user wants here make default exclusions and there do not make them, she may use the \DefaultIndexExclusions declaration himself. This declaration OCSR, but anyway let's provide the counterpart. It OCSR, too.

\UndoDefaultIndexExclusions
```
\def\UndoDefaultIndexExclusions{%
  \StoreMacro\DoNotIndex
  \let\DoNotIndex\DoIndex
  \DefaultIndexExclusions
  \RestoreMacro\DoNotIndex}
```

Index parameters

"The \IndexPrologue macro is used to place a short message into the document above the index. It is implemented by redefining \index@prologue, a macro which holds the default text. We'd better make it a \long macro to allow \par commands in its argument."

\IndexPrologue
\index@prologue
```
\long\def\IndexPrologue#1{\@bsphack\def\index@prologue{#1}%
    \@esphack}
```

\indexdiv
```
\def\indexdiv{\@ifundefined{chapter}{\section*}{\chapter*}}
```

\index@prologue
```
\@ifundefined{index@prologue}␣{\def\index@prologue{\indexdiv{%
    Index}%
  \markboth{Index}{Index}%
  Numbers␣written␣in␣italic␣refer␣to␣the␣\if@pageindex␣pages␣%
    \else
  code␣lines␣\fi␣where␣the
  corresponding␣entry␣is␣described;␣numbers␣underlined␣refer␣
    to␣the
  \if@pageindex\else␣code␣line␣of␣the␣\fi␣definition;␣numbers␣
    in
  roman␣refer␣to␣the␣\if@pageindex␣pages\else␣code␣lines␣\fi␣
    where
  the␣entry␣is␣used.
  \if@pageindex\else
    \ifx\HLPrefix\@empty
      The␣numbers␣preceded␣with␣`p.'␣are␣page␣numbers.
    \else␣The␣numbers␣with␣no␣prefix␣are␣page␣numbers.
  \fi\fi
  \ifx\IndexLinksBlack\relax\else
    All␣the␣numbers␣are␣hyperlinks.
  \fi
  \gmd@dip@hook% this hook is intended to let a user add something without
    redefining the entire prologue, see below.
}}{}
```

During the preparation of this package for publishing I needed only to add something at the end of the default index prologue. So

```
\@emptify\gmd@dip@hook
```

\AtDIPrologue
```
\long\def\AtDIPrologue#1{\g@addto@macro\gmd@dip@hook{#1}}
```

The Author(s) of doc assume multicol is known not to everybody. My assumption is the other so

```
\RequirePackage{multicol}
```

"If multicol is in use, when the index is started we compute the remaining space on the current page; if it is greater than \IndexMin, the first part of the index will then be placed in the available space. The number of columns set is controlled by the counter \c@IndexColumns which can be changed with a \setcounter declaration."

\IndexMin
```
\newdimen\IndexMin␣\IndexMin␣=␣133pt\relax% originally it was set 80 pt, but
    with my default prologue there's at least 4.7 cm needed to place the prologue
    and some index entries on the same page.
```

\c@IndexColumns
```
\newcount\c@IndexColumns␣\c@IndexColumns␣=␣3
```

theindex
```
\renewenvironment{theindex}
  {\begin{multicols}\c@IndexColumns[\index@prologue][\IndexMin]%
```

```
      \IndexLinksBlack
      \IndexParms␣\let\item\@idxitem␣\ignorespaces}%
    {\end{multicols}}
```

\IndexLinksBlack
```
\def\IndexLinksBlack{\hypersetup{linkcolor=black}}% To make Adobe Reader work faster.
```

```
\@ifundefined{IndexParms}
```

\IndexParms
```
  {\def\IndexParms{%
      \parindent␣\z@
      \columnsep␣15pt
      \parskip␣0pt␣plus␣1pt
      \rightskip␣15pt
      \mathsurround␣\z@
      \parfillskip=-15pt␣plus␣1␣fil␣% doc defines this parameter rigid but that's because of the stretchable space (more precisely, a \dotfill) between the item and the entries. But in gmdoc we define no such special delimiters, so we add an ifinite stretch.
      \small
      \def\@idxitem{\par\hangindent␣30pt}%
```

\subitem
```
      \def\subitem{\@idxitem\hspace*{15pt}}%
```

\subsubitem
```
      \def\subsubitem{\@idxitem\hspace*{25pt}}%
      \def\indexspace{\par\vspace{10pt␣plus␣2pt␣minus␣3pt}}%
      \ifx\EntryPrefix\@empty\else\raggedright\fi% long (actually, a quite *short but nonempty* entry prefix) made space stretches so terribly large in the justified paragraphs that we should make \raggedright rather.
      \ifnum\c@IndexColumns>\tw@\raggedright\fi% the numbers in narrow columns look better when they are \raggedright in my opinion.
    }}{}
```

\PrintIndex
```
\def\PrintIndex{% we ensure the standard meaning of the line end character not to cause a disaster.
  \@ifQueerEOL{\StraightEOL\printindex\QueerEOL}%
  {\printindex}}
```

Remember that if you want to change not all the parameters, you don't have to redefine the entire \IndexParms macro but you may use a very nice LaTeX command \g@addto@macro (it has \global effect, also with an apeless name (\gaddtomacro) provided by gmutils. (It adds its second argument at the end of definition of its first argument provided the first argument is a no-argument macro.) Moreover, gmutils provides also \addtomacro that has the same effect except it's not \global.

The DocStrip directives

```
\foone{\@makeother\<\@makeother\>
  \glet\sgtleftxii=<}
{
```

\gmd@docstripdirective
```
  \def\gmd@docstripdirective{%
    \begingroup\let\do=\@makeother
    \do\*\do\/\do\+\do\-\do\,\do\&\do\|\do\!\do\(\do\)\do\>\do\<%
    \@ifnextchar{<}{%
      \let\do=\@makeother␣\dospecials
      \gmd@docstripverb}
    {\gmd@docstripinner}}%
```

\gmd@docstripinner
```
  \def\gmd@docstripinner#1>{%
    \endgroup
```

```
\gmd@modulehashone
    \def\gmd@modulehashone{%
      \Module{#1}\space
      \@afternarrgfalse\@aftercodegtrue\@codeskipputgfalse}%
    \gmd@textEOL\gmd@modulehashone}
```

A word of explanation: first of all, we close the group for changed `\catcodes`; the directive's text has its `\catcodes` fixed. Then we put the directive's text wrapped with the formatting macro into one macro in order to give just one token the gmdoc's TEX code scanner. Then launch this big TEX code scanning machinery by calling `\gmd@textEOL` which is an alias for the 'narrative' meaning of the line end. This macro opens the verbatim group and launches the char-by-char scanner. That is this scanner because of what we encapsulated the directive's text with the formatting into one macro: to let it pass the scanner.

That's why in the 'old' macrocodes case the active % closes the group before launching `\gmd@docstripdirective`.

The 'verbatim' directive macro works very similarly.

```
}
\foone{\@makeother\<\@makeother\>
  \glet\sgtleftxii=<
  \catcode`\^^M=\active}%
{
\gmd@docstripverb
  \def\gmd@docstripverb<#1^^M{%
    \endgroup%
\gmd@modulehashone
    \def\gmd@modulehashone{%
      \ModuleVerb{#1}\@afternarrgfalse\@aftercodegtrue%
      \@codeskipputgfalse}%
    \gmd@docstripshook%
    \gmd@textEOL\gmd@modulehashone^^M}%
}
```

(~Verbatim ;-) from doc:)

```
\Module
\providecommand*\Module[1]{{\mod@math@codes$\langle\mathsf{#1}%
    \rangle$}}
\ModuleVerb
\providecommand*\ModuleVerb[1]{{\mod@math@codes$\langle\langle%
    \mathsf{#1}$}}
\mod@math@codes
\def\mod@math@codes{\mathcode`\|="226A␣\mathcode`\&="2026␣}
```

The changes history

The contents of this section was copied ~verbatim from the doc's documentation, with only smallest necessary changes. Then my additions were added :-)) .

"To provide a change history log, the `\changes` command has been introduced. This takes [one optional and] three [mandatory] arguments, respectively, [the macro that'll become the entry's second level,] the version number of the file, the date of the change, and some detail regarding what change has been made [i.e., the description of the change]. The [second] of these arguments is otherwise ignored, but the others are written out and may be used to generate a history of changes, to be printed at the end of the document. [… I ommit an obsolete remark about then-older MakeIndex's versions.]

The output of the `\changes` command goes into the ⟨*Glossary_File*⟩ and therefore uses the normal `\glossaryentry` commands. Thus MakeIndex or a similar program can be used to process the output into a sorted "glossary". The `\changes` command commences by taking the usual measures to hide its spacing, and then redefines

\protect for use within the argument of the generated \indexentry command. We re-code nearly all chars found in \@sanitize to letter since the use of special package which make some characters active might upset the \changes command when writing its entries to the file. However we have to leave % as comment and ␣ as ⟨*space*⟩ otherwise chaos will happen. And, of course the \ should be available as escape character."

We put the definition inside a macro that will be executed by (the first use of) \RecordChanges. And we provide the default definition of \changes as a macro just gobbling its arguments. We do this to provide no changes' writing out if \RecordChanges is not used.

\gmd@DefineChanges
```
\def\gmd@DefineChanges{%
```
\changes
```
  \outer\long\def\changes{\@bsphack\begingroup\@sanitize
    \catcode`\\\z@␣\catcode`\␣10␣\MakePercentIgnore
    \MakePrivateLetters␣\StraightEOL
    \MakeGlossaryControls
    \changes@}}
```
\changes
```
\newcommand\changes[4][]{\PackageWarningNoLine{gmdoc}{%
    ^^JThe␣\bslash␣changes␣command␣used␣\on@line
    ^^Jwith␣no␣\string\RecordChanges\space␣declared.
    ^^JI␣shall␣not␣warn␣you␣again␣about␣it}%
```
\changes
```
  \renewcommand\changes[4][]{%
  }}
```
\MakeGlossaryControls
```
\def\MakeGlossaryControls{%
  \edef\actualchar{\string=}\edef\quotechar{\string!}%
  \edef\levelchar{\string>}\edef\encapchar{\xiiclub}}%
```
for the glossary the 'actual', the 'quote' and the 'level' chars are respectively =, ! and >, the 'encap' char remains untouched. I decided to preserve the doc's settings for the compatibility.

\changes@
```
\newcommand\changes@[4][\generalname]{%
  \if@RecentChange{#3}%
```
if the date is later than the one stored in \c@Changes-
```
    % StartDate,
    \@tempswafalse
    \ifx\generalname#1%
```
then we check whether a cs-entry is given in the optional first argument or is it unchanged.
```
      \ifx\last@defmark\relax\else%
```
if no particular cs is specified in #1, we check whether \last@defmark contains something and if so, we put it into \gmu@tempb scratch macro.
```
        \@tempswatrue
        \edef\gmu@tempb{%
```
it's a bug fix: while typesetting traditional .dtxes,
```
          % \last@defmark came out with \ at the beginning (which resulted with \\⟨name⟩ in the change log) but while typesetting the 'new' way, it occurred without the bslash. So we gobble the bslash if it's present and two lines below we handle the exception of % \last@defmark = {\} (what would happen if a definition of \\ was marked in new way gmdocing).
          \if\bslash\last@defmark\else\last@defmark\fi}%
        \ifx\last@defmark\bslash\let\gmu@tempb\last@defmark\fi%
        \n@melet{gmd@glossCStest}{gmd/isaCS/\last@defmark}%
      \fi
    \else%
```
the first argument isx not \generalname i.e., a particular cs is specified by it (if some day one wishes to \changes \generalname, she should type \changes[generalname]...)

```
      \@tempswatrue
      {\escapechar\m@ne
        \xdef\gmu@tempb{\string#1}}%
      \if\bslash\@xa\@firstofmany\string#1\relax\@@nil% we check
            whether #1 is a cs...
\gmd@glossCStest        \def\gmd@glossCStest{1}% ... and tell the glossary if so.
      \fi
    \fi
\gmd@glossCStest    \@ifundefined{gmd@glossCStest}{\def\gmd@glossCStest{o}}{}%
    \protected@edef\gmu@tempa{\@nx\gmd@glossary{%
        \if\relax\GeneralName\relax\else
          \GeneralName% it's for the \DocInclude case to precede every \changes
                of the same file with the file name, cf. line 6334.
        \fi
        #2\levelchar%
        \if@tempswa% If the macro \last@defmark doesn't contain any cs name
              (i.e., is empty) nor #1 specifies a cs, the current changes entry was
              done at top-level. In this case we precede it by \generalname.
          \gmu@tempb
          \actualchar\bslash␣verb*%
          \if\verbatimchar\gmu@tempb$\else\verbatimchar\fi
          \if1\gmd@glossCStest\quotechar\bslash\fi␣\gmu@tempb
          \if\verbatimchar\gmu@tempb$\else\verbatimchar\fi
        \else
          \space\actualchar\generalname
        \fi
        :\levelchar%
        #4%
      }}%
    \gmu@tempa
    \grelaxen\gmd@glossCStest
  \fi% of \if@recentchange
  \endgroup\@esphack}
```

Let's initialize `\last@defmark` and `\GeneralName`.

```
\@relaxen\last@defmark
\@emptify\GeneralName
```

`\ChangesGeneral` `\def\ChangesGeneral{\grelaxen\last@defmark}%` If automatic detection of definitions is on, the default entry of `\changes` is the meaning of `\last@defmark`, the last detected definiendum that is. The declaration defined here serves to start a scope of 'general' `\changes` entries.

```
\AtBegInput{\ChangesGeneral}
```

Let's explain `\if@RecentChange`. We wish to check whether the change's date is later than date declared (if any limit date *was* declared). First of all, let's establish a counter to store the declared date. The untouched counters are equal 0 so if no date is declared there'll be no problem. The date will have the ⟨*YYYYMMDD*⟩ shape both to be easily compared and readable.

`\c@ChangesStartDate` `\newcount\c@ChangesStartDate`

`\if@RecentChange`

```
\def\if@RecentChange#1{%
  \gmd@setChDate#1\@@nil\@tempcnta
  \ifnum\@tempcnta>\c@ChangesStartDate}
```

\gmd@setChDate
```
\def\gmd@setChDate#1/#2/#3\@@nil#4{% the last parameter will be a \count
      register.
  #4=#1\relax
  \multiply#4␣by\@M
  \count8=#2\relax% I know it's a bit messy not to check whether the #4 \count
      is \count8 but I know this macro will only be used with \counto␣ (\@te-
      % mpcnta) and some higher (not a scratch) one.
  \multiply\count8␣by100␣%
  \advance#4␣by\count8␣\count8=\z@
  \advance#4␣by#3\relax}
```

Having the test defined, let's define the command setting the date counter. `#1` is to be the version and `#2` the date {⟨*year*⟩/⟨*month*⟩/⟨*day*⟩}.

\ChangesStart
```
\def\ChangesStart#1#2{%
  \gmd@setChDate#2\@@nil\c@ChangesStartDate
  \typeout{^^JPackage␣gmdoc␣info:␣^^JChanges'␣start␣date␣#1␣
      memorized
    as␣\string<\the\c@ChangesStartDate\string>␣\on@line.^^J}
  \advance\c@ChangesStartDate\m@ne% we shall show the changes at the speci-
      fied day and later.
  \ifnum\c@ChangesStartDate>19820900␣%[10] see below.
    \edef\gmu@tempa{%
      \@nx\g@addto@macro\@nx\glossary@prologue{%
        The␣changes
        \if\relax\GeneralName\relax\else␣of␣\GeneralName\space\fi
        earlier␣than
        #1␣\if\relax#1\relax␣#2\else(#2)\fi\space␣are␣not␣
            shown.}}%
    \gmu@tempa
  \fi}
```

(Explanation to line 5979.) My TEX Guru has remarked that the change history tool should be used for documenting the changes that may be significant for the users not only for the author and talking of what may be significant to the user, no changes should be hidden since the first published version. However, the changes' start date may be used to provide hiding the author's 'personal' notes: he should only date the 'public' changes with the four digit year and the 'personal' ones with two digit year and set `\ChangesStart{}{1000/0/0}` or so.

In line 5979 I establish a test value that corresponds to a date earlier than any TEX stuff and is not too small (early) to ensure that hiding the two digit year changes shall not be mentioned in the changes prologue.

"The entries [of a given version number] are sorted for convenience by the name of [the macro explicitly specified as the first argument or] the most recently introduced macroname (i.e., that in the most recent `\begin{macro}` command [or `\Define`]). We therefore provide [`\last@defmark`] to record that argument, and provide a default definition in case `\changes` is used outside a `macro` environment. (This is a wicked hack to get such entries at the beginning of the sorted list! It works providing no macro names start with `!` or `"`.)

This macro holds the string placed before changes entries on top-level."

\generalname
```
\def\generalname{General}
```

"To cause the changes to be written (to a .glo) file, we define `\RecordChanges` to invoke LATEX's usual `\makeglossary` command."

[10] DEK writes in *TEX, The Program* of September 1982 as the date of TEX Version 0.

I add to it also the `\writeing` definition of the `\changes` macro to ensure no changes are written out without `\RecordChanges`.

\RecordChanges
```
\def\RecordChanges{\makeglossary\gmd@DefineChanges
  \@relaxen\RecordChanges}
```

"The remaining macros are all analogues of those used for the `theindex` environment. When the glossary is started we compute the space which remains at the bottom of the current page; if this is greater than `\GlossaryMin` then the first part of the glossary will be placed in the available space. The number of columns set [is] controlled by the counter `\c@GlossaryColumns` which can be changed with a `\setcounter` declaration."

\GlossaryMin
\c@GlossaryColumns
```
\newdimen\GlossaryMin          \GlossaryMin       = 8opt
\newcount\c@GlossaryColumns    \c@GlossaryColumns = 2
```

"The environment `theglossary` is defined in the same manner as the `theindex` environment."

theglossary
```
\newenvironment{theglossary}{%
  \begin{multicols}\c@GlossaryColumns
    [\glossary@prologue][\GlossaryMin]%
    \GlossaryParms␣\IndexLinksBlack
    \let\item\@idxitem␣\ignorespaces}%
  {\end{multicols}}
```

Here is the MakeIndex style definition:

```
⟨/package⟩
⟨+gmglo⟩ preamble
⟨+gmglo⟩ "\n␣\\begin{theglossary}␣\n
⟨+gmglo⟩ \\makeatletter\n"
⟨+gmglo⟩ postamble
⟨+gmglo⟩ "\n\n␣\\end{theglossary}\n"
⟨+gmglo⟩ keyword␣"\\glossaryentry"
⟨+gmglo⟩ actual␣'='
⟨+gmglo⟩ quote␣'!'
⟨+gmglo⟩ level␣'>'
⟨*package⟩
```

The MakeIndex shell command for the glossary should look as follows:

`makeindex␣-r␣-s␣gmglo.ist␣-o␣`⟨*myfile*⟩`.gls␣`⟨*myfile*⟩`.glo`

where `-r` commands MakeIndex not to make implicit page ranges, `-s` commands MakeIndex to use the style stated next not the default settings and the `-o` option with the subsequent filename defines the name of the output.

"The `\GlossaryPrologue` macro is used to place a short message above the glossary into the document. It is implemented by redefining `\glossary@prologue`, a macro which holds the default text. We better make it a long macro to allow `\par` commands in its argument."

\GlossaryPrologue
\glossary@prologue
```
\long\def\GlossaryPrologue#1{\@bsphack
  \def\glossary@prologue{#1}%
  \@esphack}
```

"Now we test whether the default is already defined by another package file. If not we define it."

\glossary@prologue
```
\@ifundefined{glossary@prologue}
  {\def\glossary@prologue{\indexdiv{{Change␣History}}%
```

```
      \markboth{{Change History}}{{Change History}}%
    }}{}
```

"Unless the user specifies otherwise, we set the change history using the same parameters as for the index."

```
\AtBeginDocument{%
  \@ifundefined{GlossaryParms}{\let\GlossaryParms\IndexParms}{}}
```

\GlossaryParms

"To read in and print the sorted change history, just put the `\PrintChanges` command as the last (commented-out, and thus executed during the documentation pass through the file) command in your package file. Alternatively, this command may form one of the arguments of the `\StopEventually` command, although a change history is probably not required if only the description is being printed. The command assumes that MakeIndex or some other program has processed the .glo file to generate a sorted .gls file."

\PrintChanges

```
\def\PrintChanges{% to avoid a disaster among queer EOLs:
  \@ifQueerEOL
    {\StraightEOL\@input@{\jobname.gls}\QueerEOL}%
    {\@input@{\jobname.gls}}%
    \g@emptify\PrintChanges}
```

\toCTAN

```
\pdef\toCTAN#1#2{%
          % #1 version number,
          % #2 date ⟨year/month/day⟩.
    \changes{#1}{#2}{put to \acro{CTAN} on #2}}
```

The checksum

doc provides a checksum mechanism that counts the backslashes in the scanned code. Let's do almost the same.

At the beginning of the source file you may put the `\CheckSum` macro with a number (in one of TEX's formats) as its argument and TEX with gmdoc shall count the number of the *escape chars* in the source file and tell you in the .log file (and on the terminal) whether you have typed the right number. If you don't type `\CheckSum`, TEX anyway will tell you how much it is.

\check@sum

```
\newcount\check@sum
```

\CheckSum

```
\def\CheckSum#1{\@bsphack\global\check@sum#1\relax\@esphack}
```

CheckSum

```
\newcounter{CheckSum}
```

\step@checksum

```
\newcommand*\step@checksum{\stepcounter{CheckSum}}
```

And we'll use it in the line 3550 (`\stepcounter` is `\global`). See also the `\chschange` declaration, l. 6245.

However, the check sum mechanism in gmdoc behaves slightly different than in doc which is nicely visible while gmdocing doc: doc states its check sum to be 2171 and our count counts 2126. The mystery lies in the fact that doc's CheckSum mechanism counts the code's backslashes no matter what they mean and the gmdoc's the escape chars so, among others, `\\` at the default settings increases doc's CheckSum by 2 while the gmdoc's by 1. (There are 38 occurrences of `\\` in doc.dtx `macrocodes`, I counted myself.)[11]

"But `\Finale` will be called at the very end of a file. This is exactly the point were we want to know if the file is uncorrupted. Therefore we also call `\check@checksum` at this point."

[11] My opinion is that nowadays a check sum is not necessary for checking the completness of a file but I like it as a marker of file development and this more than that is its rôle in gmdoc.

In gmdoc we have the `\AtEndInput` hook.

```
\AtEndInput{\check@checksum}
```

Based on the lines 723–741 of doc.dtx.

\check@checksum
```
\def\check@checksum{\relax
  \ifnum\check@sum=\z@
    \edef\gmu@tempa{% why \edef—see line 6224
      \@nx\typeout{**********************************^^J%
        *␣The␣input␣file␣\gmd@inputname\space␣has␣no␣Checksum
        stated.^^J%
        *␣The␣current␣checksum␣is␣\the\c@CheckSum.^^J%
        \gmd@chschangeline% a check sum changes history entry, see below.
        *␣(package␣gmdoc␣info.)^^J%
        **********************************^^J}}
    \else
    \ifnum\check@sum=\c@CheckSum
      \edef\gmu@tempa{%
        \@nx\typeout{**********************+^^J%
          *␣The␣input␣file␣\gmd@inputname:␣Checksum␣passed.^^J%
          \gmd@chschangeline
          *␣(package␣gmdoc␣info.)^^J%
          **********************+^^J}}
    \else
      \edef\gmu@tempa{%
        \@nx\typeout{********!*!*!*!*!*!*!*!*!*!*!^^J%
          *!␣The␣input␣file␣\gmd@inputname:^^J%
          *!␣The␣CheckSum␣stated:␣\the\check@sum\space<>␣my
          count:␣\the\c@CheckSum.^^J%
          \gmd@chschangeline
          *!␣(package␣gmdoc␣info.)^^J%
          ********!*!*!*!*!*!*!*!*!*!^^J}}%
    \fi
  \fi
  \gmu@tempa
  \@xa\AtEndDocument\@xa{\gmu@tempa}% we print the checksum notification
        on the terminal immediately and at end of TEXing not to have to scroll the
        output far nor search the log.
  \global\check@sum\z@}
```

As I mentioned above, I use the check sum mechanism to mark the file growth. Therefore I provide a macro that produces a line on the terminal to be put somewhere at the beginning of the source file's commentary for instance.

\gmd@chschangeline
```
\def\gmd@chschangeline{%
  \xiipercent\space\string\chschange
  {\@ifundefined{fileversion}{v???}{\fileversion}}%
  {\the\year/\the\month/\the\day}%
  {\the\c@CheckSum}^^J%
  \xiipercent\space\string\chschange
  {\@ifundefined{fileversion}{v???}{\fileversion}}%
  {\@xa\@gobbletwo\the\year/\the\month/\the\day}%
  {% with two digit year in case you use \ChangesStart.
    \the\c@CheckSum}^^J}
```

And here the meaning of such a line is defined:

\chschange 6245 \newcommand*\chschange[3]{%
6246 \csname␣changes\endcsname{#1}{#2}{CheckSum␣#3}%\csname... because % \changes is \outer.
6248 \CheckSum{#3}}

It will make a 'General' entry in the change history unless used in some \Define's scope or inside a macro environment. It's intended to be put somewhere at the beginning of the documented file.

Macros from ltxdoc

I'm not sure whether this package still remains 'minimal' but I liked the macros provided by ltxdoc.cls so much…

The next page setup declaration is intended to be used with the article's default Letter paper size. But since

\ltxPageLayout 6270 \newcommand*\ltxPageLayout{%

"Increase the text width slightly so that width the standard fonts 72 columns of code may appear in a macrocode environment."

6274 \setlength{\textwidth}{355pt}%

"Increase the marginpar width slightly, for long command names. And increase the left margin by a similar amount."

To make these settings independent from the defaults (changed e.g. in gmdocc.cls) we replace the original \addtolengths with \setlengths.

6284 \setlength\marginparwidth{95pt}%
6285 \setlength\oddsidemargin{82pt}%
6286 \setlength\evensidemargin{82pt}}

\DocInclude and the ltxdoc-like setup

Let's provide a command for including multiple files into one document. In the ltxdoc class such a command is defined to include files as parts. But we prefer to include them as chapters in the classes that provide \chapter. We'll redefine \maketitle so that it make a chapter or a part heading *unlike* in ltxdoc where the file parts have their titlepages with only the filename and article-like titles made by \maketitle.

But we will also provide a possibility of typesetting multiple files exactly like with the ltxdoc class.

\DocInclude So, define the \DocInclude command, that acts

"more or less exactly the same as \include, but uses \DocInput on a dtx [or .fdd] file, not \input on a tex file."

Our version will accept also .sty, .cls, and .tex files.

\DocInclude 6318 \newcommand*\DocInclude{\bgroup\@makeother_\Doc@Include}% First, we make _ 'other' in order to allow it in the filenames.

\Doc@Include 6321 \newcommand*{\Doc@Include}[2][]{% originally it took just one argument. Here we make it take two, first of which is intended to be the path (with the closing % /). This is intended not to print the path in the page footers only the filename.

6326 \egroup% having the arguments read, we close the group opened by the previous macro for $_{12}$.

\HLPrefix 6328 \gdef\HLPrefix{\filesep}%
6329 \gdef\EntryPrefix{\filesep}% we define two rather kernel parameters to expand to the file marker. The first will bring the information to one of the

default \IndexPrologue's \ifs. Therefore the definition is global. The latter is such for symmetry.

\GeneralName 6334 \def\GeneralName{#2\actualchar\pk{#2}␣}% for the changes'history main level entry.

Now we check whether we try to include ourselves and if so—we'll (create and) read an .auxx file instead of (the main) .aux to avoid an infinite recursion of \inputs.

```
6341    \edef\gmd@jobname{\jobname}%
6342    \edef\gmd@difilename{% we want the filename all 'other', just as in \jobname.
6344      \@xa\@xa\@xa\@gobble\@xa\string\csname#2\endcsname}%
6345    \ifx\gmd@jobname\gmd@difilename
\gmd@auxext 6346      \def\gmd@auxext{auxx}%
6347    \else
\gmd@auxext 6348      \def\gmd@auxext{aux}%
6349    \fi
6350  \relax
6352  \clearpage
6354  \gmd@docincludeaux
\currentfile 6355  \def\currentfile{gmdoc-IncludeFileNotFound.ooo}%
6356  \let\fullcurrentfile\currentfile
6357  \IfFileExists{#1#2.fdd}{\edef\currentfile{#2.fdd}}{% it's not .fdd,
6358    \IfFileExists{#1#2.dtx}{\edef\currentfile{#2.dtx}}{% it's not .dtx
          either,
6360      \IfFileExists{#1#2.sty}{\edef\currentfile{#2.sty}}{% it's not .sty,
6362        \IfFileExists{#1#2.cls}{\edef\currentfile{#2.cls}}{% it's not
              .cls,
6364          \IfFileExists{#1#2.tex}{\edef\currentfile{#2.tex}}{% it's not
                .tex,
6366            \IfFileExists{#1#2.fd}{\edef\currentfile{#2.fd}}{% so it
                  must be .fd or error.
6368              \PackageError{gmdoc}{\string\DocInclude\space␣file
6369                #1#2.fdd/dtx/sty/cls/tex/fd␣not␣found.}}}}}}}%
6372  \edef\fullcurrentfile{#1\currentfile}%
6373  \ifnum\@auxout=\@partaux
6374    \@latexerr{\string\DocInclude\space␣cannot␣be␣nested}\@eha
6375  \else␣\@docinclude{#1}#2␣\fi}% Why is #2 delimited with ␣ not braced as
      we are used to, one may ask.
```

\@docinclude 6381 \def\@docinclude#1#2␣{% To match the macro's parameter string, is an answer. But why is \@docinclude defined so? Originally, in ltxdoc it takes one argument and it's delimited with a space probably in resemblance to the true \input (\@@input in LaTeX).

```
6386  \clearpage
6388  \if@filesw␣\gmd@writemauxinpaux{#2.\gmd@auxext}\fi% this strange macro
        with a long name is another thing to allow _ in the filenames (see line 6449).
6391  \@tempswatrue
6392  \if@partsw␣\@tempswafalse\edef\gmu@tempb{#2}%
6393    \@for␣\gmu@tempa:=\@partlist\do{\ifx\gmu@tempa\gmu@tempb%
          \@tempswatrue\fi}%
6394  \fi
6395  \if@tempswa␣\let\@auxout\@partaux
6396    \if@filesw
```

```
6397        \immediate\openout\@partaux␣#2.\gmd@auxext\relax% Yes, only #2.
                It's to create and process the partial .aux(x) files always in the main
                document's (driver's) directory.
6402        \immediate\write\@partaux{\relax}%
6403      \fi
```

"We need to save (and later restore) various index-related commands which might be changed by the included file."

```
6410      \StoringAndRelaxingDo\gmd@doIndexRelated
6411      \if@ltxDocInclude\part{\currentfile}% In the ltxdoc-like setup we make
              a part title page with only the filename and the file's \maketitle will
              typeset an article-like title.
6414      \else\let\maketitle=\InclMaketitle
6415      \fi% In the default setup we redefine \maketitle to typeset a common chapter
              or part heading.
6417      \if@ltxDocInclude\xdef@filekey\fi
6418      \GetFileInfo{\currentfile}% it's my (GM) addition with the account of
              using file info in the included files' title/heading etc.
6420      \incl@DocInput{\fullcurrentfile}% originally just \currentfile.
6421      \if@ltxDocInclude\else\xdef@filekey\fi% in the default case we add
              new file to the file key after the input because in this case it's the files
              own \maketitle what launches the sectioning command that increases
              the counter.
```

And here is the moment to restore the index-related commands.

```
6427      \RestoringDo\gmd@doIndexRelated
6429      \clearpage
6431      \gmd@writeckpt{#1#2}%
6432      \if@filesw␣\immediate\closeout\@partaux␣\fi
6433    \else\@nameuse{cp@#1#2}%
6434    \fi
6435    \let\@auxout\@mainaux}% end of \@docinclude.
```

(Two is a sufficient number of iterations to define a macro for.)

\xdef@filekey
```
6439 \def\xdef@filekey{{\@relaxen\ttfamily% This assignment is very trickly crafted:
          it makes all \ttfamilys present in the \filekey's expansion unexpandable
          not only the one added in this step.
6443      \xdef\filekey{\filekey,␣\thefilediv={\ttfamily%
              \currentfile}}}}
```

To allow _ in the filenames we must assure _ will be $_{12}$ while reading the filename. Therefore define

\gmd@writemauxinpaux
```
6449 \def\gmd@writemauxinpaux#1{% this name comes from 'write outto main .aux to
          input partial .aux'.
```

We wrap \@input{⟨*partial .aux*⟩} in a $_{12}$ hacked scope. This hack is especially recommended here since the .aux file may contain a non-\global stuff that should not be localized by a group that we would have to establish if we didn't use the hack. (Hope you understand it. If not, notify me and for now I'll only give a hint: "Look at it with the TEX's eyes". More uses of this hack are to be seen in gmutils where they are a bit more explained.)

```
6461    \immediate\write\@mainaux{%
6462      \bgroup\string\@makeother\string\_%
6463      \string\firstofone{\egroup
```

```
    \string\@input{#1}}}}
```

We also slightly modify a LaTeX kernel macro `\@writeckpt` to allow _ in the file name.

`\gmd@writeckpt`
```
\def\gmd@writeckpt#1{%
  \immediate\write\@partaux{%
    \string\bgroup\string\@makeother\string\_%
    \string\firstofone\@charlb\string\egroup}
  \@writeckpt{#1}%
  \immediate\write\@partaux{\@charrb}}
```

`\gmd@doIndexRelated`
```
\def\gmd@doIndexRelated{%
  \do\tableofcontents␣\do\makeindex␣\do\EnableCrossrefs
  \do\PrintIndex␣\do\printindex␣\do\RecordChanges␣\do%
       \PrintChanges
  \do\theglossary␣\do\endtheglossary}
```

```
\@emptify\filesep
```

The ltxdoc class establishes a special number format for multiple file documentation numbering needed to document the LaTeX sources. I like it too, so

`\aalph`
```
\def\aalph#1{\@aalph{\csname␣c@#1\endcsname}}
```

`\@aalph`
```
\def\@aalph#1{%
  \ifcase#1\or␣a\or␣b\or␣c\or␣d\or␣e\or␣f\or␣g\or␣h\or␣i\or
        j\or␣k\or␣l\or␣m\or␣n\or␣o\or␣p\or␣q\or␣r\or␣s\or
        t\or␣u\or␣v\or␣w\or␣x\or␣y\or␣z\or␣A\or␣B\or␣C\or
        D\or␣E\or␣F\or␣G\or␣H\or␣I\or␣J\or␣K\or␣L\or␣M\or
        N\or␣O\or␣P\or␣Q\or␣R\or␣S\or␣T\or␣U\or␣V\or␣W\or
        X\or␣Y\or␣Z\else\@ctrerr\fi}
```

A macro that initialises things for `\DocInclude`.

`\gmd@docincludeaux`
```
\def\gmd@docincludeaux{%
```

We set the things for including the files only once.

```
  \global\@relaxen\gmd@docincludeaux
```

By default, we will include multiple files into one document as chapters in the classes that provide `\chapter` and as parts elsewhere.

```
  \ifx\filediv\relax
    \ifx\filedivname\relax% (nor \filediv neither \filedivname is defined
         by the user)
      \@ifundefined{chapter}{%
        \SetFileDiv{part}}%
      {\SetFileDiv{chapter}}%
    \else% (\filedivname is defined by the user, \filediv is not)
      \SetFileDiv{\filedivname}% why not? Inside is \edef so it'll work.
    \fi
  \else% (\filediv is defined by the user
    \ifx\filedivname\relax% and \filedivname is not)
      \PackageError{gmdoc}{You've␣redefined␣\string\filediv\space
        without␣redefining␣\string\filedivname.}{Please␣redefine␣
            the
        two␣macros␣accordingly.␣You␣may␣use␣\string\SetFileDiv{%
            name
          without␣bslash}.}%
```

```
    \fi
  \fi
\thefilediv \def\thefilediv{\aalph{\filedivname}}% The files will be numbered with
      letters, lowercase first.
  \@xa\let\csname␣the\filedivname\endcsname=\thefilediv% This line lets
      \the⟨chapter⟩ etc. equal \thefilediv.
\filesep \def\filesep{\thefilediv-}% File separator (identifier) for the index.
  \let\filekey=\@gobble
  \g@addto@macro\index@prologue{%
    \gdef\@oddfoot{\parbox{\textwidth}{\strut\footnotesize
        \raggedright{\bfseries␣File␣Key:}␣\filekey}}% The footer for the
          pages of index.
    \glet\@evenfoot\@oddfoot}% anyway, it's intended to be oneside.
  \g@addto@macro\glossary@prologue{%
    \gdef\@oddfoot{\strut␣Change␣History\hfill\thepage}% The footer for
        the changes history.
    \glet\@evenfoot\@oddfoot}%
  \gdef\@oddfoot{% The footer of the file pages will be its name and, if there is
      a file info, also the date and version.
    \@xa\ifx\csname␣ver@\currentfile\endcsname\relax
      File␣\thefilediv:␣{\ttfamily\currentfile}␣%
    \else
      \GetFileInfo{\currentfile}%
      File␣\thefilediv:␣{\ttfamily\filename}␣%
      Date:␣\filedate\␣%
      Version␣\fileversion
    \fi
    \hfill\thepage}%
  \glet\@evenfoot\@oddfoot% see line 6545.
  \@xa\def\csname\filedivname␣name\endcsname{File}% we redefine the name
      of the proper division to 'File'.
  \ifx\filediv\section
    \let\division=\subsection
    \let\subdivision=\subsubsection
    \let\subsubdivision=\paragraph
```

If `\filediv` is higher than `\section` we don't change the three divisions (they are `\section`, `\subsection` and `\subsubsection` by default). `\section` seems to me the lowest reasonable sectioning command for the file. If `\filediv` is lower you should rather rethink the level of a file in your documentation not redefine the two divisions.

```
  \fi}% end of \gmd@docincludeaux.
```

The `\filediv` and `\filedivname` macros should always be set together. Therefore provide a macro that takes care of both at once. Its `#1` should be a sectioning name without the backslash.

```
\SetFileDiv \def\SetFileDiv#1{%
  \edef\filedivname{#1}%
  \@xa\let\@xa\filediv\csname#1\endcsname}

\SelfInclude \def\SelfInclude{\DocInclude{\jobname}}
```

The ltxdoc class makes some preparations for inputting multiple files. We are not sure if the user wishes to use ltxdoc-like way of documenting (maybe she will prefer what I offer, gmdocc.cls e.g.), so we put those preparations into a declaration.

\if@ltxDocInclude
```
\newif\if@ltxDocInclude
```
\ltxLookSetup
```
\newcommand*\ltxLookSetup{%
  \SetFileDiv{part}%
  \ltxPageLayout
  \@ltxDocIncludetrue
}
\@onlypreamble\ltxLookSetup
```
The default is that we \DocInclude the files due to the original gmdoc input settings.
```
\let\incl@DocInput=\DocInput
```
```
\@emptify\currentfile% for the pages outside the \DocInclude's scope. In force
      for all includes.
```
If you want to \Doc/SelfInclude doc-likes:

\olddocIncludes
```
\newcommand*\olddocIncludes{%
  \let\incl@DocInput=\OldDocInput}
```
And, if you have set the previous and want to set it back:

\gmdocIncludes
```
\newcommand*\gmdocIncludes{%
  \let\incl@DocInput=\DocInput
  \AtBegInput{\QueerEOL}}% to move back the \StraightEOL declaration put at
      begin input by \olddocIncludes.
```

Redefinition of \maketitle

\maketitle A not-so-slight alteration of the \maketitle command in order it allow multiple titles in one document seems to me very clever. So let's copy again (ltxdoc.dtx the lines 643–656):

"The macro to generate titles is easily altered in order that it can be used more than once (an article with many titles). In the original, diverse macros were concealed after use with \relax. We must cancel anything that may have been put into \@thanks, etc., otherwise all titles will carry forward any earlier such setting!"

But here in gmdoc we'll do it locally for (each) input not to change the main title settings if there are any.
```
\AtBegInput{%
```
\maketitle
```
  \providecommand*\maketitle{\par
    \begingroup␣\def␣\thefootnote␣{\fnsymbol␣{footnote}}%
    \setcounter␣{footnote}\z@
    \def\@makefnmark{\hbox␣to\z@{$\m@th^{\@thefnmark}$\hss}}%
```
\@makefntext
```
    \long\def\@makefntext##1{\parindent␣1em\noindent
      \hbox␣to1.8em{\hss$\m@th^{\@thefnmark}$}##1}%
    \if@twocolumn␣\twocolumn␣[\@maketitle␣]%
    \else␣\newpage␣\global␣\@topnum␣\z@␣\@maketitle␣\fi
```
"For special formatting requirements (such as in TUGboat), we use pagestyle titlepage for this; this is later defined to be plain, unless already defined, as, for example, by ltugboat.sty."
```
    \thispagestyle{titlepage}\@thanks␣\endgroup
```
"If the driver file documents many files, we don't want parts of a title of one to propagate to the next, so we have to cancel these:"
```
    \setcounter␣{footnote}\z@
    \gdef\@date{\today}\g@emptify\@thanks%
    \g@emptify\@author\g@emptify\@title%
```

```
}%
```

"When a number of articles are concatenated into a journal, for example, it is not usual for the title pages of such documents to be formatted differently. Therefore, a class such as ltugboat can define this macro in advance. However, if no such definition exists, we use pagestyle plain for title pages."

```
\@ifundefined{ps@titlepage}{\let\ps@titlepage=\ps@plain}{}%
```

And let's provide `\@maketitle` just in case: an error occurred without it at TEXing with mwbk.cls because this class with the default options does not define `\@maketitle`. The below definitions are taken from report.cls and mwrep.cls.

```
\providecommand*\@maketitle{%
  \newpage\null␣\vskip␣2em\relax%
  \begin{center}%
    \titlesetup
    \let␣\footnote␣\thanks
    {\LARGE␣\@title␣\par}%
    \vskip␣1.5em%
    {\large␣\lineskip␣.5em%
      \begin{tabular}[t]{c}%
        \strut␣\@author
      \end{tabular}\par}%
    \vskip␣1em%
    {\large␣\@date}%
  \end{center}%
  \par␣\vskip␣1.5em\relax}%
```

We'd better restore the primary meanings of the macros making a title. (LATEX 2_ε source, File F: ltsect.dtx Date: 1996/12/20 Version v1.0z, lines 3.5.7.9–12.14–17.)

\title
```
\providecommand*\title[1]{\gdef\@title{#1}}
```
\author
```
\providecommand*\author[1]{\gdef\@author{#1}}
```
\date
```
\providecommand*\date[1]{\gdef\@date{#1}}
```
\thanks
```
\providecommand*\thanks[1]{\footnotemark
  \protected@xdef\@thanks{\@thanks
    \protect\footnotetext[\the\c@footnote]{#1}}%
}%
```
\and
```
\providecommand*\and{% ␣%␣\begin{tabular}
  \end{tabular}%
  \hskip␣1em␣\@plus.17fil%
  \begin{tabular}[t]{c}}% ␣%␣\end{tabular}
```
And finally, let's initialize `\titlesetup` if it is not yet.

\titlesetup
```
  \providecommand*\titlesetup{}%
}% end of \AtBegInput.
```

The ltxdoc class redefines the `\maketitle` command to allow multiple titles in one document. We'll do the same and something more: our `\Doc/SelfInclude` will turn the file's `\maketitle` into a part or chapter heading. But, if hte `\ltxLookSetup` declaration is in force, `\Doc/SelfInclude` will make for an included file a part's title page and an article-like title.

Let's initialize the file division macros.

```
\@relaxen\filediv
\@relaxen\filedivname
\@relaxen\thefilediv
```

If we don't include files the ltxdoc-like way, we wish to redefine `\maketitle` so that it typesets a division's heading.

Now, we redefine `\maketitle` and its relatives.

```
\InclMaketitle 6750 \def\InclMaketitle{%
\and           6753   {\def\and{, }% we make \and just a comma.
               6754     {\let\thanks=\@gobble% for the toc version of the heading we discard \thanks.
               6756       \protected@xdef\incl@titletotoc{\@title\if@fshda\protect%
                              \space
               6757         (\@author)\fi}% we add the author iff the 'files have different authors'
                              % (@fshda)
               6759     }%
\thanks        6760     \def\thanks##1{\footnotemark
               6761       \protected@xdef\@thanks{\@thanks% to keep the previous \thanks if
                              there were any.
               6763         \protect\footnotetext[\the\c@footnote]{##1}}}% for some mys-
                              terious reasons so defined \thanks do typeset the footnote mark
                              and text but they don't hyperlink it properly. A hyperref bug?
               6767     \@emptify\@thanks
               6768     \protected@xdef\incl@filedivtitle{%
               6769       [{\incl@titletotoc}]% braces to allow [ and ] in the title to toc.
               6771       {\protect\@title
               6772         {\smallerr% this macro is provided by the gmutils package after the rel-
                              size package.
               6774           \if@fshda\\[0.15em]\protect\@author
               6775             \if\relax\@date\relax\else, \fi
               6776           \else
               6777             \if\relax\@date\relax\else\\[0.15em]\fi
               6778           \fi
```

The default is that all the included files have the same author(s). In this case we won't print the author(s) in the headings. Otherwise we wish to print them. The information which case are we in is brought by the `\if@fshda` switch defined in line 6809.

If we wish to print the author's name (`\if@fshda`), then we'll print the date after the author, separated with a comma. If we don't print the author, there still may be a date to be printed. In such a case we break the line, too, and print the date with no comma.

```
               6790           \protect\@date}}% end of \incl@filedivtitle's brace (2nd or 3rd
                                argument).
               6792     }% end of \incl@filedivtitle's \protected@xdef.
```

We `\protect` all the title components to avoid expanding `\footnotemark` hidden in `\thanks` during `\protected@xdef` (and to let it be executed during the typesetting, of course).

```
               6796     }% end of the comma-\and's group.
               6797     \@xa\filediv\incl@filedivtitle
               6798     \@thanks
               6799     \g@relaxen\@author \g@relaxen\@title \g@relaxen\@date
               6800     \g@emptify\@thanks
               6801 }% end of \InclMaketitle.
```

What I make the default, is an assumption that all the multi-documented files have the same author(s). And with the account of the other possibility I provide the below switch and declaration.

```
\if@fshda      6809 \newif\if@fshda
```

(its name comes from *f*iles *h*ave *d*ifferent *a*uthors).

\PrintFilesAuthors
```
\newcommand*\PrintFilesAuthors{\@fshdatrue}
```

And the counterpart, if you change your mind:

\SkipFilesAuthors
```
\newcommand*\SkipFilesAuthors{\@fshdafalse}
```

The file's date and version information

Define \filedate and friends from info in the \ProvidesPackage etc. commands.

\GetFileInfo \filename \gmu@tempb \filedate \fileversion \fileinfo
```
\def\GetFileInfo#1{%
  \def\filename{#1}%
  \def\gmu@tempb##1␣##2␣##3\relax##4\relax{%
    \def\filedate{##1}%
    \def\fileversion{##2}%
    \def\fileinfo{##3}}%
  \edef\gmu@tempa{\csname␣ver@#1\endcsname}%
  \@xa\gmu@tempb\gmu@tempa\relax?␣?␣\relax\relax}
```

Since we may documentally input files that we don't load, as doc e.g., let's define a declaration to be put (in the comment layer) before the line(s) containing \Provides... The \FileInfo command takes the stuff till the closing] and subsequent line end, extracts from it the info and writes it to the .aux and rescans the stuff. ε-TEX provides a special primitive for that action but we remain strictly TEXnical and do it with writing to a file and inputting that file.

\FileInfo
```
\newcommand*\FileInfo{%
  \bgroup
  \gmd@ctallsetup
  \bgroup% yes, we open two groups because we want to rescan tokens in 'usual'
        catcodes. We cannot put \gmd@ctallsetup into the inner macro because
        when that will be executed, the \inputlineno will be too large (the last not
        the first line).
  \let\do\@makeother
  \do\␣\do\{\do\}\do\^^M\do\\%
  \gmd@fileinfo}
\foone{%
  \catcode`!\z@
  \catcode`(\@ne
  \catcode`)\tw@
  \let\do\@makeother
  \do\␣% we make space 'other' to keep it for scanning the code where it may be
        leading.
  \do\{\do\}\do\^^M\do\\}%
(%
```

\gmd@fileinfo
```
!def!gmd@fileinfo#1Provides#2{#3}#4[#5]#6^^M%
(!egroup% we close the group of changed catcodes, the catcodes of the arguments
      are set. And we are still in the group for \gmd@ctallsetup.
!gmd@writeFI(#2)(#3)(#5)%
!gmd@FIrescan(#1Provides#2{#3}#4[#5]#6)% this macro will close the group.
)%
)
```

\gmd@writeFI
```
\def\gmd@writeFI#1#2#3{%
  \immediate\write\@auxout{%
```

```
      \global\@nx\@namedef{%
        ver@#2.\if␣P\@firstofmany#1\@@nil␣sty\else␣cls\fi}{#3}}}
\foone\obeylines{%
  \def\gmd@FIrescan#1{%
 {\newlinechar=`\^^M\scantokens{#1}}\egroup^^M}}
```

\gmd@FIrescan

And, for the case the input file doesn't contain `\Provides...`, a macro for explicit providing the file info. It's written in analogy to `\ProvidesFile`, source 2_ϵ, file L v1.1g, l. 102.

```
\def\ProvideFileInfo#1{%
  \begingroup
    \catcode`\␣10␣\catcode\endlinechar␣10␣%
    \@makeother\/\@makeother\&%
    \kernel@ifnextchar[{\gmd@providefii{#1}}{\gmd@providefii{#1}[]}%
  }
\def\gmd@providefii#1[#2]{%
      (we don't write the file info to .log)
  \@xa\xdef\csname␣ver@#1\endcsname{#2}%
  \endgroup}
```

\ProvideFileInfo \gmd@providefii

And a self-reference abbreviation (intended for providing file info for the driver):

```
\def\ProvideSelfInfo{\ProvideFileInfo{\jobname.tex}}
```

\ProvideSelfInfo

A neat conventional statement used in doc's documentation e.g., to be put in `\thanks` to the title or in a footnote:

```
\newcommand*\filenote{This␣file␣has␣version␣number␣\fileversion{%
    }␣dated␣\filedate{}.}
```

\filenote

And exactly as `\thanks`:

```
\newcommand*\thfileinfo{\thanks\filenote}
```

\thfileinfo

Miscellanea

The main inputting macro, `\DocInput` has been provided. But there's another one in doc and it looks very reasonably: `\IndexInput`. Let's make analogous one here:

```
\foone{\obeylines}%
{%
  \def\IndexInput#1{%
    \StoreMacro\code@delim%
    \CodeDelim\^^Z%
    \def\gmd@iihook{% this hook is \edefed!
      \@nx^^M%
      \code@delim\relax\@nx\let\@nx\EOFMark\relax}%
    \DocInput{#1}\RestoreMacro\code@delim}%
}
```

\IndexInput \gmd@iihook

How does it work? We assume in the input file is no explicit ⟨*char1*⟩. This char is chosen as the code delimiter and will be put at the end of input. So, entire file contents will be scanned char by char as the code.

The below environment I designed to be able to skip some repeating texts while documenting several packages of mine into one document. At the default settings it's just a `\StraightEOL` group and in the `\skipgmlonely` declaration's scope it gobbles its contents.

```
\newenvironment{gmlonely}{\StraightEOL}{}
\newcommand\skipgmlonely[1][]{%
  \def\gmu@tempa{%
    \def\gmd@skipgmltext{%
      \g@emptify\gmd@skipgmltext
      #1%
    }}% not to count the lines of the substituting text but only of the text omitted
  \gmu@tempa
  \@xa\AtBegInput\@xa{\gmu@tempa}%
  \renewenvironment{gmlonely}{%
    \StraightEOL
    \@fileswfalse% to forbid writing to .toc, .idx etc.
    \setboxo=\vbox\bgroup}{\egroup\gmd@skipgmltext}}
```

Sometimes in the commentary of this package, so maybe also others, I need to say some char is of category 12 ('other sign'). This I'll mark just as $_{12}$ got by `\catother`.

```
\foone{\catcode`\_=8␣}% we ensure the standard \catcode of _.
{
  \newcommand*\catother{${}_{12}$}%
```

Similarly, if we need to say some char is of category 13 ('active'), we'll write $_{13}$, got by `\catactive`

```
  \newcommand*\catactive{${}_{13}$}%
```

and a letter, $_{11}$

```
  \newcommand*\catletter{${}_{11}$}%.
}
```

For the copyright note first I used just `verse` but it requires marking the line ends with `\\` and indents its contents while I prefer the copyright note to be flushed left. So

```
\newenvironment*{copyrnote}{%
  \StraightEOL\everypar{\hangindent3em\relax\hangafter1␣}%
  \par\addvspace\medskipamount\parindent\z@\obeylines}{%
  \@codeskipputgfalse\stanza}
```

I renew the `quotation` environment to make the fact of quoting visible.

```
\StoreEnvironment{quotation}
\def\gmd@quotationname{quotation}
\renewenvironment{quotation}{%
```

The first non-me user complained that `abstract` comes out in quotation marks. That is because `abstract` uses `quotation` internally. So we first check whether the current environment is `quotation` or something else.

```
  \ifx\@currenvir\gmd@quotationname
  \afterfi{\par``\ignorespaces}%
  \else\afterfi{\storedcsname{quotation}}%
  \fi}
{\ifx\@currenvir\gmd@quotationname
  \afterfi{\ifhmode\unskip\fi''\par}%
  \else\afterfi{\storedcsname{endquotation}}%
  \fi}
```

For some mysterious reasons `\noindent` doesn't work with the first (narrative) paragraph after the code so let's work it around:

```
\gmdnoindent 7018 \def\gmdnoindent{%
             7019   \ifvmode\leavevmode\hskip-\parindent\ignorespaces
             7020   \fi}% \ignorespaces is added to eat a space inserted by \gmd@textEOL. Without it it also worked but it was a bug: since \parindent is a dimen not skip, TeX looks forward and expands macros to check whether there is a stretch or shrink part and therefore it gobbled the \gmd@textEOL's space.
```

When a verbatim text occurs in an inline comment, it's advisable to precede it with % if it begins a not first line of such a comment not to mistake it for a part of code. Moreover, if such a short verb breaks in its middle, it should break with the percent at the beginning of the new line. For this purpose provide

```
\inverb      7032 \newcommand*\inverb{%
             7034   \@ifstar{%
\gmu@tempa   7035     \def\gmu@tempa{{\tt\xiipercent}}%
             7036     \@emptify\gmu@tempb% here and in the paralell points of the other case and % \nlpercent I considered an \ifhmode test but it's not possible to be in vertical mode while in an inline comment. If there happens vertical mode, the commentary begins to be 'outline' (main text).
             7041     \gmd@inverb}%
             7042   {\@emptify\gmu@tempa
\gmu@tempb   7043     \def\gmu@tempb{\gmboxedspace}%
             7044     \gmd@inverb}}
\gmboxedspace 7046 \newcommand*\gmboxedspace{\hbox{\normalfont{␣}}}
\gmd@nlperc  7048 \newcommand*\gmd@nlperc[1][]{%
             7051   \ifhmode\unskip\fi
             7052   \discretionary{\hbox{\gmu@tempa}}% (pre-break). I always put a \hbox here to make this discretionary score the \hyphenpenalty not \exhyphenpenalty (The TeXbook p. 96) since the latter may be 10,000 in Polish typesetting.
             7056   {{\tt\xiipercent\gmboxedspace}}% (post-break)
             7057   {\gmu@tempb}% (no-break).
             7058   \penalty10000\hskiposp\relax}
\gmd@inverb  7060 \newcommand*\gmd@inverb[1][]{%
             7061   \gmd@nlperc
             7062   \ifmmode\hbox\else\leavevmode\null\fi
             7063   \bgroup
             7064   \ttverbatim
\breakablevisspace 7065   \def\breakablevisspace{%
             7066     \discretionary{\visiblespace}{\xiipercent\gmboxedspace}{%
                      \visiblespace}}%
\breakbslash 7067   \def\breakbslash{%
             7068     \discretionary{}{\xiipercent\gmboxedspace\bslash}{\bslash}}%
\breaklbrace 7069   \def\breaklbrace{%
             7070     \discretionary
             7071       {\xiilbrace\verbhyphen}%
             7072       {\xiipercent\gmboxedspace}%
             7073       {\xiilbrace}}%
             7074   \gm@verb@eol
             7077   \@sverb@chbsl% It's always with visible spaces.
             7078 }
\nlpercent   7080 \newcommand*\nlpercent{%
\gmu@tempa   7081   \@ifstar{\def\gmu@tempa{{\tt\xiipercent}}%
             7082     \@emptify\gmu@tempb
```

```
      \gmd@nlperc}%
    {\@emptify\gmu@tempa
\gmu@tempb    \def\gmu@tempb{\gmboxedspace}%
      \gmd@nlperc}}

\incs \newcommand*\incs{% an inline \cs
\gmu@tempa  \@ifstar{\def\gmu@tempa{{\tt\xiipercent}}%
      \@emptify\gmu@tempb
      \gmd@nlperc\cs}%
    {\@emptify\gmu@tempa
\gmu@tempb    \def\gmu@tempb{\gmboxedspace}%
      \gmd@nlperc\cs}}

\inenv \def\inenv{\incs[]}% an in-line \env
```

As you see, `\inverb` and `\nlpercent` insert a discretionary that breaks to % at the beginning of the lower line. Without the break it's a space (alas at its natural width i.e., not flexible) or, with the starred version, nothing. The starred version puts % also at the end of the upper line. Then `\inverb` starts sth. like `\verb*` but the breakables of it break to % in the lower line.

TODO: make the space flexible (most probably it requires using sth. else than `\discretionary`).

An optional hyphen for cses in the inline comment:

```
\@ifundefined{+}{}{\typeout{^^Jgmdoc.sty: redefining \bslash+.}}
\+ \def\+{\discre{{\normalfont-}}{{\tt\xiipercent\gmboxedspace}}{}}

\ds \providecommand*\ds{DocStrip}
```

A shorthand for \CS:

```
\CS \pdef\CS{%
      \acro{CS}%
      \@ifnextcat a{ }{}}% we put a space if the next token is 11. It's the next best
                         thing to checking whether the cs consisting of letters is followed by a space.

\CSs \pdef\CSs{\CS{}es\@ifnextcat a{ }{}}% for pluralis.
\CSes \pdef\CSes{\CS{}es\@ifnextcat a{ }{}}% for pluralis.
```

Finally, a couple of macros for documenting files playing with %'s catcode(s). Instead of % I used &. They may be at the end because they're used in the commented thread i.e. after package's `\usepackage`.

```
\CDAnd \newcommand*\CDAnd{\CodeDelim\&}

\CDPerc \newcommand*\CDPerc{\CodeDelim*\%}
```

And for documenting in general:

A general sectioning command because I foresee a possibility of typesetting the same file once as independent document and another time as a part of bigger whole.

```
\division \let\division=\section

\subdivision \let\subdivision=\subsection

\subsubdivision \let\subsubdivision=\subsubsection
```

To kill a tiny little bug in doc.dtx (in line 3299 `\gmu@tempb` and `\gmu@tempc` are written plain not verbatim):

```
gmd@mc \newcounter{gmd@mc}
```

Note it is after the `macrocode` group

```
\gmd@mchook \def\gmd@mchook{\stepcounter{gmd@mc}%
```

```
    \gmd@mcdiag
    \ifcsname␣gmd@mchook\the\c@gmd@mc\endcsname
    \afterfi{\csname␣gmd@mchook\the\c@gmd@mc\endcsname}%
    \fi}
\AfterMacrocode \long\def\AfterMacrocode#1#2{\@namedef{gmd@mchook#1}{#2}}
```

What have I done? I declare a new counter and employ it to count the `macrocode(*)`s (and `oldmc(*)`s too, in fact) and attach a hook to (after) the end of every such environment. That lets us to put some stuff pretty far inside the compiled file (for the buggie in doc.dtx, to redefine \gmu@tempb/c).

One more detail to expalin and define: the \gmd@mcdiag macro may be defined to type out a diagnostic message (the `macrocode(*)`'s number, code line number and input line number).

```
\@emptify\gmd@mcdiag
\mcdiagOn \def\mcdiagOn{\def\gmd@mcdiag{%
\gmd@mcdiag     \typeout{^^J\bslash␣end{\@currenvir}␣No.\the\c@gmd@mc
      \space\on@line,␣cln.\the\c@codelinenum.}}}
\mcdiagOff \def\mcdiagOff{\@emptify\gmd@mcdiag}
```

An environment to display the meaning of macro parameters: its items are automatically numbered as #1, #2 etc.

```
enumargs \newenvironment*{enumargs}[1][1]%
{\if@aftercode\edef\gmu@tempa{\the\leftskip}%
  \edef\gmu@tempb{\the\hangindent}\fi
  \enumerate
  \if@aftercode
    \leftskip=\glueexpr\gmu@tempa+\gmu@tempb\relax
  \fi
  \@namedef{label\@enumctr}{%
    \env{\if@aftercode\code@delim\space\fi
      \gmd@ea@bwrap
      \#\ifcase#1\relax\or\or\#\or\or\#\#\#\fi
      \csname␣the\@enumctr\endcsname
      \gmd@ea@ewrap}}%
  \let\mand\item
\gmd@ea@wraps  \provide\gmd@ea@wraps{%
    \emptify\gmd@ea@ewrap
    \emptify\gmd@ea@bwrap}%
  \gmd@ea@wraps
\opt  \def\opt{%
\gmd@ea@bwrap   \def\gmd@ea@bwrap{[}\def\gmd@ea@ewrap{]}%
\gmd@ea@ewrap  \item
    \gmd@ea@wraps}%
}
{\endenumerate}
```

The starred version is intended for lists of arguments some of which are optional: to align them in line.

```
enumargs* \newenvironment*{enumargs*}{%
\gmd@ea@wraps   \def\gmd@ea@wraps{%
\gmd@ea@bwrap     \def\gmd@ea@bwrap{␣}\def\gmd@ea@ewrap{␣}}%
\gmd@ea@ewrap  \enumargs}{\endenumargs}
```

doc-compatibility

My TEX Guru recommended me to write hyperlinking for doc. The suggestion came out when writing of gmdoc was at such a stage that I thought it to be much easier to write a couple of `\let`s to make gmdoc able to typeset sources written for doc than to write a new package that adds hyperlinking to doc. So…

The doc package makes `%` an ignored char. Here the `%` delimits the code and therefore has to be 'other'. But only the first one after the code. The others we may re`\catcode` to be ignored and we do it indeed in line 2419.

At the very beginning of a doc-prepared file we meet a nice command `\CharacterTable`. My TEX Guru says it's a bit old fashioned these days so let's just make it notify the user:

\CharacterTable
```
\def\CharacterTable{\begingroup
  \@makeother\{\@makeother\}%
  \Character@Table}
\foone{%
  \catcode`\[=1 \catcode`\]=2 %
  \@makeother\{\@makeother\}}%
[
```
\Character@Table
```
  \def\Character@Table#1{#2}[\endgroup
    \message[^^J^^J gmdoc.sty package:^^J
    ==== The input file contains the \bslash CharacterTable.^^J
    ==== If you really need to check the correctness of the
         chars,^^J
    ==== please notify the author of gmdoc.sty at the email
         address^^J
    ==== given in the legal notice in gmdoc.sty.^^J^^J]%
  ]]
```

Similarly as doc, gmdoc provides `macrocode`, `macro` and `environment` environments. Unlike in doc, `\end{macrocode}` *does not* require to be preceded with any particular number of spaces. Unlike in doc, it *is not* a kind of `verbatim`, however, which means the code and narration layers remains in force inside it which means that any text after the first `%` in a line will be processed as narration (and its control sequences will be executed). For a discussion of a possible workaround see line 7630.

Let us now look over other original doc's control sequences and let's 'domesticate' them if they are not yet.

\DescribeMacro
\DescribeEnv
The `\DescribeMacro` and `\DescribeEnv` commands seem to correspond with my `\TextUsage` macro in its plain and starred version respectively except they don't typeset their arguments in the text i.e., they do two things of the three. So let's `\def` them to do these two things in this package, too:

\DescribeMacro
```
\outer\def\DescribeMacro{%
  \begingroup\MakePrivateLetters
  \gmd@ifonetoken\Describe@Macro\Describe@Env}
```

Note that if the argument to `\DescribeMacro` is not a (possibly starred) control sequence, then as an environment's name shall it be processed *except* the `\MakePrivateOthers` re`\catcode`ing shall not be done to it.

\DescribeEnv
```
\outer\def\DescribeEnv{%
  \begingroup\MakePrivateOthers\Describe@Env}
```

Actually, I've used the `\Describe...` commands myself a few times, so let's `\def` a common command with a starred version:

\Describe
```
\outer\def\Describe{% It doesn't typeset its argument in the point of occurrence.
  \begingroup\MakePrivateLetters
  \@ifstarl{\MakePrivateOthers\Describe@Env}{\Describe@Macro}}
```

The below two definitions are adjusted ~s of `\Text@UsgMacro` and `\Text@UsgEnvir`.

\Describe@Macro
```
\long\def\Describe@Macro#1{%
  \endgroup
  \strut\Text@Marginize#1%
  \@usgentryze#1% we declare kind of formatting the entry
  \text@indexmacro#1\ignorespaces}
```

\Describe@Env
```
\def\Describe@Env#1{%
  \endgroup
  \strut\Text@Marginize{#1}%
  \@usgentryze{#1}% we declare the 'usage' kind of formatting the entry and index the sequence #1.
  \text@indexenvir{#1}\ignorespaces}
```

Note that here the environments' names are typeset in `\tt` font just like the macros', *unlike* in doc.

My understanding of 'minimality' includes avoiding too much freedom as causing chaos not beauty. That's the philosophical and æ sthetic reason why I don't provide
\MacroFont `\MacroFont`. In my opinion there's a noble tradition of typesetting the TEX code in `\tt` font nad this tradition sustained should be. If one wants to change the tradition, let him redefine `\tt`, in TEX it's no problem. I suppose `\MacroFont` is not used explicitly, and that it's (re)defined at most, but just in case let's `\let`:

```
\let\MacroFont\tt
```

\CodeIndent
\MacroIndent
We have provided `\CodeIndent` in line 2236. And it corresponds with doc's `\MacroIndent` so

\MacroIndent
```
\let\MacroIndent\CodeIndent
```

And similarly the other skips:

\MacrocodeTopsep
```
\let\MacrocodeTopsep\CodeTopsep
```

\MacroTopsep
Note that `\MacroTopsep` is defined in gmdoc and has the same rôle as in doc.

\SpecialEscapechar
```
\let\SpecialEscapechar\CodeEscapeChar
```

\theCodelineNo
\LineNumFont
`\theCodelineNo` is not used in gmdoc. Instead of it there is `\LineNumFont` declaration and a possibility to redefine `\thecodelinenum` as for all the counters. Here the `\LineNumFont` is used two different ways, to set the benchmark width for a linenumber among others, so it's not appropriate to put two things into one macro. Thus let's give the user a notice if she defined this macro:

Because of possible localness of the definitions it seems to be better to add a check at the end of each `\DocInput` or `\IndexInput`.

```
\AtEndInput{\@ifundefined{theCodelineNo}{}{\PackageInfo{gmdoc}{%
      The
       \string\theCodelineNo\space␣macro␣has␣no␣effect␣here,␣
           please␣use
       \string\LineNumFont\space␣for␣setting␣the␣font␣and/or
       \string\thecodelinenum\space␣to␣set␣the␣number␣format.}}}
```

I hope this lack will not cause big trouble.

For further notifications let's define a shorthand:

```
\noeffect@info 7368 \def\noeffect@info#1{\@ifundefined{#1}{}{\PackageInfo{gmdoc}{^^J%
7369       The␣\bslash#1␣macro␣is␣not␣supported␣by␣this␣package^^J
7370       and␣therefore␣has␣no␣effect␣but␣this␣notification.^^J
7371       If␣you␣think␣it␣should␣have,␣please␣contact␣the␣
               maintainer^^J
7372       indicated␣in␣the␣package's␣legal␣note.^^J}}}
```

The four macros formatting the macro and environment names, namely `\PrintDescribeMacro`, `\PrintMacroName`, `\PrintDescribeEnv` and `\PrintEnvName` are not supported by gmdoc. They seem to me to be too internal to take care of them. Note that in the name of (æsthetical) minimality and (my) convenience I deprive you of easy knobs to set strange formats for verbatim bits: I think they are not advisable.

Let us just notify the user.

```
7385 \AtEndInput{%
7386   \noeffect@info{PrintDescribeMacro}%
7387   \noeffect@info{PrintMacroName}%
7388   \noeffect@info{PrintDescribeEnv}%
7389   \noeffect@info{PrintEnvName}}
```

The `\CodelineNumbered` declaration of doc seems to be equivalent to our `noindex` option with the `linesnotnum` option set off so let's define it such a way.

```
\CodelineNumbered 7394 \def\CodelineNumbered{\AtBeginDocument{\gag@index}}
7395 \@onlypreamble\CodelineNumbered
```

Note that if the `linesnotnum` option is in force, this declaration shall not revert its effect.

I assume that if one wishes to use doc's interface then he'll not use gmdoc's options but just the default.

The `\CodelineIndex` and `\PageIndex` declarations correspond with the gmdoc's default and the `pageindex` option respectively. Therefore let's `\let`

```
7407 \let\CodelineIndex\@pageindexfalse
7408 \@onlypreamble\CodelineIndex
7410 \let\PageIndex\@pageindextrue
7412 \@onlypreamble\PageIndex
```

The next two declarations I find useful and smart:

```
\DisableCrossrefs 7416 \def\DisableCrossrefs{\@bsphack\gag@index\@esphack}
\EnableCrossrefs  7418 \def\EnableCrossrefs{\@bsphack\ungag@index
\DisableCrossrefs 7419   \def\DisableCrossrefs{\@bsphack\@esphack}\@esphack}
```

The latter definition is made due to the footnote 6 on p. 8 of the Frank Mittelbach's doc's documentation and both of them are copies of lines 302–304 of it modulo `\(un)gag@index`.

The subsequent few lines I copy almost verbatim ;-) from the lines 611–620.

```
\AlsoImplementation 7427 \newcommand*\AlsoImplementation{\@bsphack%
\StopEventually     7428   \long\def\StopEventually##1{\gdef\Finale{##1}}% we define \Finale
                           just to expand to the argument of \StopEventually not to to add anything
                           to the end input hook because \Finale should only be executed if entire
                           document is typeset.
                       %\init@checksum is obsolete in gmdoc at this point: the CheckSum counter is reset
                           just at the beginning of (each of virtually numerous) input(s).
                    7439   \@esphack}
```

```
\AlsoImplementation
```

"When the user places an `\OnlyDescription` declaration in the driver file the document should only be typeset up to `\StopEventually`. We therefore have to redefine this macro."

\OnlyDescription
\StopEventually

```
\def\OnlyDescription{\@bsphack\long\def\StopEventually##1{%
```

"In this case the argument of `\StopEventually` should be set and afterwards TEX should stop reading from this file. Therefore we finish this macro with"

```
    ##1\endinput}\@esphack}
```

"If no `\StopEventually` command is given we silently ignore a `\Finale` issued."

```
\@relaxen\Finale
```

\meta
\<...>

The `\meta` macro is so beautifully crafted in doc that I couldn't resist copying it into gmutils. It's also available in Knuthian (*The TEXbook* format's) disguise `\<`⟨*the argument*⟩`>`.

The checksum mechanism is provided and developed for a slightly different purpose.

Most of doc's indexing commands have already been 'almost defined' in gmdoc:

```
\let\SpecialMainIndex=\DefIndex
```

\SpecialMainEnvIndex

```
\def\SpecialMainEnvIndex{\csname␣CodeDefIndex\endcsname*}% we don't
    type \DefIndex explicitly here because it's \outer, remember?
```

\SpecialIndex

```
\let\SpecialIndex=\CodeCommonIndex
```

\SpecialUsageIndex

```
\let\SpecialUsageIndex=\TextUsgIndex
```

\SpecialEnvIndex

```
\def\SpecialEnvIndex{\csname␣TextUsgIndex\endcsname*}
```

\SortIndex

```
\def\SortIndex#1#2{\index{#1\actualchar#2}}
```

"All these macros are usually used by other macros; you will need them only in an emergency."

Therefore I made the assumption(s) that 'Main' indexing macros are used in my 'Code' context and the 'Usage' ones in my 'Text' context.

\verbatimchar

Frank Mittelbach in doc provides the `\verbatimchar` macro to (re)define the `\verb(*)`'s delimiter for the index entries. The gmdoc package uses the same macro and its default definition is `{&}`. When you use doc you may have to redefine `\verbatimchar` if you use (and index) the `\+` control sequence. gmdoc does a check for the analogous situation (i.e., for processing `\&`) and if it occurs it takes `$` as the `\verb*`'s delimiter. So strange delimiters are chosen deliberately to allow any 'other' chars in the environments' names. If this would cause problems, please notify me and we'll think of adjustments.

\verbatimchar

```
\def\verbatimchar{&}
```

One more a very neat macro provided by doc. I copy it verbatim and put into gmutils, too. (`\DeclareRobustCommand` doesn't issue an error if its argument has been defined, it only informs about redefining.)

*

```
\pdef\*{\leavevmode\lower.8ex\hbox{$\,\widetilde{\␣}\,$}}
```

\IndexPrologue

`\IndexPrologue` is defined in line 5571. And other doc index commands too.

```
\@ifundefined{main}{}{\let\DefEntry=\main}
```

```
\@ifundefined{usage}{}{\let\UsgEntry=\usage}
```

About how the DocStrip directives are supported by gmdoc, see section The DocStrip…. This support is not *that* sophisticated as in doc, among others, it doesn't count

the modules' nesting. Therefore if we dont want an error while gmdocumenting doc-prepared files, better let's define doc's counter for the modules' depths.

StandardModuleDepth
```
\newcounter{StandardModuleDepth}
```

For now let's just mark the macro for further development

\DocstyleParms
```
\noeffect@info{DocstyleParms}
```

For possible further development or to notify the user once and forever:

\DontCheckModules
\CheckModules
```
\@emptify\DontCheckModules␣\noeffect@info{DontCheckModules}
\@emptify\CheckModules␣\noeffect@info{CheckModules}
```

\Module The `\Module` macro *is* provided exactly as in doc.

\AltMacroFont
```
\@emptify\AltMacroFont␣\noeffect@info{AltMacroFont}
```

"And finally the most important bit: we change the `\catcode` of `%` so that it is ignored (which is how we are able to produce this document!). We provide two commands to do the actual switching."

\MakePercentIgnore
\MakePercentComment
```
\def\MakePercentIgnore{\catcode`\%9\relax}
\def\MakePercentComment{\catcode`\%14\relax}
```

gmdocing doc.dtx

The author(s) of doc suggest(s):

"For examples of the use of most—if not all—of the features described above consult the doc.dtx source itself."

Therefore I hope that after doc.dtx has been gmdoc-ed, one can say gmdoc is doc-compatible "at most—if not at all".

TEXing the original doc with my humble[12] package was a challenge and a milestone experience in my TEX life.

One of minor errors was caused by my understanding of a 'shortverb' char: due to gmverb, in the math mode an active 'shortverb' char expands to itself's 'other' version thanks to `\string` (It's done with `|` in mind). doc's concept is different, there a 'shortverb' char should in the math mode work as shortverb. So let it be as they wish: gmverb provides `\OldMakeShortVerb` and the oldstyle input commands change the inner macros so that also `\MakeShortVerb` works as in doc (cf. line 7592).

We also redefine the `macro` environment to make it mark the first code line as the point of defining of its argument, because doc.dtx uses this environment also for implicit definitions.

\OldDocInput
```
\def\OldDocInput{%
  \AtBegInputOnce{\StraightEOL
    \let\@MakeShortVerb=\old@MakeShortVerb
    \OldMacrocodes}%
  \bgroup\@makeother\_% it's to allow _ in the filenames. The next macro will
      close the group.
  \Doc@Input}
```

We don't swith the `@codeskipput` switch neither we check it because in 'old' world there's nothing to switch this switch in the narration layer.

I had a hot and wild TEX all the night nad what a bliss when the 'Succesfully formated 67 page(s)' message appeared.

[12] What a *false* modesty! ;-)

My package needed fixing some bugs and adding some compatibility adjustments (listed in the previous section) and the original doc.dtx source file needed a few adjustments too because some crucial differences came out. I'd like to write a word about them now.

The first but not least is that the author(s) of doc give the CS marking commands non-macro arguments sometimes, e.g., `\DescribeMacro{StandardModuleDepth}`. Therefore we should launch the *starred* versions of corresponding gmdoc commands. This means the doc-like commands will not look for the CS's occurrence in the code but will mark the first codeline met.

Another crucial difference is that in gmdoc the narrative and the code layers are separated with only the code delimiter and therefore may be much more mixed than in doc. among others, the `macro` environment is *not* a typical `verbatim` like: the texts commented out within `macrocode` are considered a normal commentary i.e., not verbatim. Therefore some macros 'commented out' to be shown verbatim as an example source must have been 'additionally' verbatimized for gmdoc with the shortverb chars e.g. You may also change the code delimiter for a while, e.g., the line

7630 `% \AVerySpecialMacro % delete the first % when...`

was got with

```
\CodeDelim\.
% \AVerySpecialMacro % delete the first % when.\unskip|..|\CDPerc
```

One more difference is that my shortverb chars expand to their $_{12}$ versions in the math mode while in doc remain shortverb, so I added a declaration `\OldMakeShortVerb` etc.

Moreover, it's TEXing doc what inspired adding the `\StraightEOL` and `\QueerEOL` declarations.

Polishing, development and bugs

• `\MakePrivateLetters` theoretically may interfere with `\activeating` some chars to allow linebreaks. But making a space or an opening brace a letter seems so perverse that we may feel safe not to take account of such a possibility.
• When `countalllines*` option is enabled, the comment lines that don't produce any printed output result with a (blank) line too because there's put a hypertarget at the beginning of them. But for now let's assume this option is for draft versions so hasn't be perfect.
• Marcin Woliński suggests to add the marginpar clauses for the AMS classes as we did for the standard ones in the lines 2081–2086. Most probably I can do it on request when I only know the classes' names and their 'marginpar status'.
• When the `countalllines*` option is in force, some `\list` environments shall raise the 'missing `\item`' error if you don't put the first `\item` in the same line as `\begin{%` ⟨*environment*⟩`}` because the (comment-) line number is printed.
• I'm prone to make the control sequences hyperlinks to the(ir) 'definition' occurrences. It doesn't seem to be a big work compared with what has been done so far.
• Is `\RecordChanges` really necessary these days? Shouldn't be the `\makeglossary` command rather executed by default?[13]
• Do you use `\listoftables` and/or `\listoffigures` in your documentations? If so, I should 'EOL-straighten' them like `\tableofcontents`, I suppose (cf. line 2515).

[13] It's understandable that ten years earlier writing things out to the files remarkably decelerated TEX, but nowadays it does not in most cases. That's why `\makeindex` is launched by default in gmdoc.

• Some lines of non-printing stuff such as `\Define...` and `\changes` connecting the narration with the code resulted with unexpected large vertical space. Adding a fully blank line between the printed narration text and not printed stuff helped.

• Specifying `codespacesgrey,␣codespacesblank` results in typesetting all the spaces grey including the leading ones.

• About the DocStrip verbatim mode directive see above.

(No) ⟨*eof*⟩

Until version 0.99i a file that is `\DocInput` had to be ended with a comment line with an `\EOF` or `\NoEOF` cs that suppressed the end-of-file character to make input end properly. Since version 0.99i however the proper ending of input is acheved with `\everyeof` and therefore `\EOF` and `\NoEOF` become a bit obsolete.

If the user doesn't wish the documentation to be ended by '⟨*eof*⟩', she should redefine the `\EOFMark` cs or end the file with a comment ending with `\NoEOF` macro defined below[14]:

```
7724 \foone{\catcode`\^^M\active␣}{%
\@NoEOF 7725   \def\@NoEOF#1^^M{%
7726     \@relaxen\EOFMark\endinput}%
  \@EOF 7727   \def\@EOF#1^^M{\endinput}}
\NoEOF 7729 \def\NoEOF{\QueerEOL\@NoEOF}
  \EOF 7730 \def\EOF{\QueerEOL\@EOF}
```

As you probably see, `\(No)EOF` have the 'immediate' `\endinput` effect: the file ends even in the middle of a line, the stuff after `\(No)EOF` will be gobbled unlike with a bare `\endinput`.

```
7741 \endinput
7743 ⟨/package⟩
```

[14] Thanks to Bernd Raichle at BachoTEX 2006 Session where he presented `\inputing` a file inside `\edef`.

b. The gmdocc Class For gmdoc Driver Files[1]

Written by Natror (Grzegorz Murzynowski),
natror at 02 dot pl


```
\NeedsTeXFormat{LaTeX2e}
\ProvidesClass{gmdocc}
              [2008/10/08 v0.81 a class for gmdoc driver files
                   (GM)]
```

Intro

This file is a part of gmdoc bundle and provides a document class for the driver files documenting (LA)TEX packages &a. with my gmdoc.sty package. It's not necessary, of course: most probably you may use another document class you like.

By default this class loads mwart class with a4paper (default) option and lmodern package with T1 fontencoding. It loads also my gmdoc documenting package which loads some auxiliary packages of mine and the standard ones.

If the mwart class is not found, the standard article class is loaded instead. Similarly, if the lmodern is not found, the standard Computer Modern font family is used in the default font encoding.

Usage

For the ideas and details of gmdocing of the (LA)TEX files see the gmdoc.sty file's documentation (chapter a). The rôle of the gmdocc document class is rather auxiliary and exemplary. Most probably, you may use your favourite document class with the settings you wish. This class I wrote to meet my needs of fine formatting, such as not numbered sections and sans serif demi bold headings.

However, with the users other than myself in mind, I added some conditional clauses that make this class works also if an mwcls class or the lmodern package are unknown.

noindex

Of rather many options supported by gmdoc.sty, this class chooses my favourite, i.e., the default. An exception is made for the `noindex` option, which is provided by this class and passed to gmdoc.sty. This is intended for the case you don't want to make an index.

nochanges

Simili modo, the `nochanges` option is provided to turn creating the change history off.

[1] This file has version number v0.81 dated 2008/10/08.

Both of the above options turn the *writing out to the files* off. They don't turn off `\PrintIndex` nor `\PrintChanges`. (Those two commands are no-ops by themselves if there's no .ind (n)or .gls file respectively.)

outeroff

One more option is `outeroff`. It's intended for compiling the documentation of macros defined with the `\outer` prefix. It `\relaxes` this prefix so the '`\outer`' macros' names can appear in the arguments of other macros, which is necessary to pretty mark and index them.

I decided not to make discarding `\outer` the default because it seems that LaTeX writers don't use it in general and gmdoc.sty *does* make some use of it.

debug

This class provides also the `debug` option. It turns the `\if@debug` Boolean switch True and loads the trace package that was a great help to me while debugging gmdoc.sty.

The default base document class loaded by gmdocc.cls is Marcin Woliński mwart. If you have not installed it on your computer, the standard article will be used.

Moreover, if you like MW's classes (as I do) and need `\chapter` (for multiple files' input e.g.), you may declare another mwcls with the option homonimic with the class'es name: `mwrep` for mwrep and `mwbk` for mwbk. For the symmetry there's also `mwart` option (equivalent to the default setting).

mwrep
mwbk
mwart

The existence test is done for any MW class option as it is in the default case.

Since version 0.99g (November 2007) the bundle goes XeTeX and that means you can use the system fonts if you wish, just specify the `sysfonts` option and the three basic XeTeX-related packages (fontspec, xunicode and xltxtra) will be loaded and then you can specify fonts with the fontspec declarations. For use of them check the driver of this documentation where the TeX Gyre Pagella font is specified as the default Roman.

sysfonts

\EOFMark

The `\EOFMark` in this class typesets like this (of course, you can redefine it as you wish):

□

The Code

```
\RequirePackage{xkeyval}
```

A shorthands for options processing (I know xkeyval to little to redefine the default prefix and family).

\gm@DOX
\gm@EOX

```
\newcommand*\gm@DOX{\DeclareOptionX[gmcc]<>}
\newcommand*\gm@EOX{\ExecuteOptionsX[gmcc]<>}
```

We define the `class` option. I prefer the mwcls, but you can choose anything else, then the standard article is loaded. Therefore we'd better provide a Boolean switch to keep the score of what was chosen. It's to avoid unused options if article is chosen.

\ifgmcc@mwcls

```
\newif\ifgmcc@mwcls
```

Note that the following option defines `\gmcc@class#1`.

class

```
\gm@DOX{class}{% the default will be Marcin Woliński class (mwcls) analogous to
      article, see line 264.
```

\gmcc@CLASS

```
  \def\gmcc@CLASS{#1}%
  \@for\gmcc@resa:=mwart,mwrep,mwbk\do␣{%
    \ifx\gmcc@CLASS\gmcc@resa\gmcc@mwclstrue\fi}%
}
```

mwart

```
\gm@DOX{mwart}{\gmcc@class{mwart}}% The mwart class may also be declared
      explicitly.
```

mwrep 168 \gm@DOX{mwrep}{\gmcc@class{mwrep}}% If you need chapters, this option chooses an MW class that corresponds to report,

mwbk 172 \gm@DOX{mwbk}{\gmcc@class{mwbk}}% and this MW class corresponds to book.

article 175 \gm@DOX{article}{\gmcc@class{article}}% you can also *choose* article. A meta-remark: When I tried to do the most natural thing, to \ExecuteOptionsX inside such declared option, an error occured: 'undefined control sequence % \XKV@resa␣->␣\@nil'.

outeroff 183 \gm@DOX{outeroff}{\let\outer\relax}% This option allows \outer-prefixed macros to be gmdoc-processed with all the bells and whistles.

\if@debug 187 \newif\if@debug

debug 189 \gm@DOX{debug}{\@debugtrue}% This option causes trace to be loaded and the Boolean switch of this option may be used to hide some things needed only while debugging.

noindex 194 \gm@DOX{noindex}{%
195 \PassOptionsToPackage{noindex}{gmdoc}}% This option turns the writing outto .idx file off.

\if@gmccnochanges 199 \newif\if@gmccnochanges

nochanges 201 \gm@DOX{nochanges}{\@gmccnochangestrue}% This option turns the writing outto .glo file off.

gmeometric 205 \gm@DOX{gmeometric}{}% The gmeometric package causes the \geometry macro provided by geometry package is not restricted to the preamble.

Since version 0.99g of gmdoc the bundle goes XeTeX and that means geometry should be loaded with `dvipdfm` option and the \pdfoutput counter has to be declared and that's what gmeometric does by default if with XeTeX. And gmeometric has passed enough practical test. Therefore the `gmeometric` option becomes obsolete and the package is loaded always instead of original geometry.

As already mentioned, since version 0.99g the gmdoc bundle goes XeTeX. That means that if XeTeX is detected, we may load the fontspec package and the other two of basic three XeTeX-related, and then we \fontspec the fonts. But the default remains the old way and the new way is given as the option below.

\ifgmcc@oldfonts 224 \newif\ifgmcc@oldfonts

sysfonts 226 \gm@DOX{sysfonts}{\gmcc@oldfontsfalse}

Now we define a key-val option that sets the version of marginpar typewriter font definition (relevant only with the `sysfonts` option). 0 for OpenType LMTT LC visible for the system (not on my computer), 1 for LMTT LC specially on my computer, any else number to avoid an error if you don't have OpenType LMTT LC installed (and leave the default gmdoc's definition of \marginpartt; all the versions allow the user to define marginpar typewriter himself).

mptt 235 \gm@DOX{mptt}[17]{\def\mpttversion{#1}}% the default value (17) works if the
\mpttversion user puts the `mptt` option with no value. In that case leaving the default gmdoc's definition of marginpar typewriter and letting the user to redefine it herself seemed to me most natural.

\gmcc@setfont 241 \def\gmcc@setfont#1{%
242 \gmcc@oldfontsfalse% note that if we are not in XeTeX, this switch will be turned true in line 313
244 \AtBeginDocument{%
245 \@ifXeTeX{%

```
      \defaultfontfeatures{Numbers={OldStyle,Proportional}}%
      \setmainfont[Mapping=tex-text]{#1}%
      \setsansfont[Mapping=tex-text, Scale=MatchLowercase]{Latin Modern Sans}%
        \setmonofont[Scale=MatchLowercase]{Latin Modern Mono}%
      \let\sl\it \let\textsl\textit
    }{}}%
}
```

minion
```
\gm@DOX{minion}{\gmcc@setfont{Minion Pro}}
```

pagella
```
\gm@DOX{pagella}{\gmcc@setfont{TeX Gyre Pagella}%
```

\gmcc@PAGELLA
```
  \def\gmcc@PAGELLA{1}%
}
```

fontspec
```
\gm@DOX{fontspec}{\PassOptionsToPackage{#1}{fontspec}}
```

```
\gm@EOX{class=mwart}% We set the default basic class to be mwart.
```

```
\gm@EOX{mptt=o}% We default to set the marginpar typewriter font to OpenType LMTT LC.
```

```
\DeclareOptionX*{\PassOptionsToPackage{\CurrentOption}{gmdoc}}
```

```
\ProcessOptionsX[gmcc]<>
```

```
\ifgmcc@mwcls
  \IfFileExists{\gmcc@CLASS.cls}{}{\gmcc@mwclsfalse}% As announced, we do the ontological test to any mwcls.
\fi
\ifgmcc@mwcls
  \XKV@ifundefined{XeTeXdefaultencoding}{}{%
    \XeTeXdefaultencoding "cp1250"}% mwcls are encoding-sensitive because MW uses Polish diacritics in the commentaries.
  \LoadClass[fleqn, oneside, noindentfirst, 11pt, withmarginpar,
  sfheadings]{\gmcc@CLASS}%
  \XKV@ifundefined{XeTeXdefaultencoding}{}{%
    \XeTeXdefaultencoding "utf-8"}%
\else
  \LoadClass[fleqn, 11pt]{article}% Otherwise the standard article is loaded.
\fi
```

```
\RequirePackage{gmutils}[2008/10/08]% we load it early to provide \@ifXeTeX.
```

```
\ifgmcc@mwcls\afterfi\ParanoidPostsec\fi
```

```
\@ifXeTeX{}{\gmcc@oldfontstrue}
```

```
\AtBeginDocument{\mathindent=\CodeIndent}
```

The `fleqn` option makes displayed formulæ be flushed left and `\mathindent` is their indentation. Therefore we ensure it is always equal `\CodeIndent` just like `\leftskip` in `verbatim`. Thanks to that and the `\edverbs` declaration below you may display single verbatim lines with `\[...\]`:

```
\[|\verbatim\stuff|\].
```

```
\ifgmcc@oldfonts
  \IfFileExists{lmodern.sty}{% We also examine the ontological status of this package
    \RequirePackage{lmodern}% and if it shows to be satisfactory (the package shows *to be*), we load it and set the proper font encoding.
    \RequirePackage[T1]{fontenc}%
```

```
  }{}%
```

A couple of diacritics I met while gmdocing these files and The Source etc. Somewhy the accents didn't want to work at my XeTeX settings so below I define them for XeTeX as respective chars.

```
\agrave  \def\agrave␣␣{\`a}%
\cacute  \def\cacute␣␣{\'c}%
\eacute  \def\eacute␣␣{\'e}%
\idiaeres  \def\idiaeres{\"\i}%
\nacute  \def\nacute␣␣{\'n}%
\ocircum  \def\ocircum␣{\^o}%
\oumlaut  \def\oumlaut␣{\"o}%
\uumlaut  \def\uumlaut␣{\"u}%
\else% this case happens only with XeTeX.
  \let\do\relaxen
  \do\Finv\do\Game\do\beth\do\gimel\do\daleth% these five caused the 'already defined' error.
  \let\@zf@euenctrue\zf@euencfalse
   \XeTeXthree%
\agrave  \def\agrave␣␣{\char"00E0␣}%
\cacute  \def\cacute␣␣{\char"0107␣}% Note the space to be sure the number ends here.
\eacute  \def\eacute␣␣{\char"00E9␣}%
\idiaeres  \def\idiaeres{\char"00EF␣}%
\nacute  \def\nacute␣␣{\char"0144␣}%
\oumlaut  \def\oumlaut␣{\char"00F6␣}%
\uumlaut  \def\uumlaut␣{\char"00FC␣}%
\ocircum  \def\ocircum␣{\char"00F4␣}%
  \AtBeginDocument{%
\ae    \def\ae{\char"00E6␣}%
       \def\l␣{\char"0142␣}%
\oe    \def\oe{\char"0153␣}%
  }%
\fi
```

Now we set the page layout.

```
\RequirePackage{gmeometric}
\gmdoccMargins  \def\gmdoccMargins{%
  \geometry{top=77pt,␣height=687pt,␣% =53 lines but the lines option seems not to work 2007/11/15 with TeX Live 2007 and XeTeX 0.996-patch1
    left=4cm,␣right=2.2cm}}
\gmdoccMargins
\if@debug% For debugging we load also the trace package that was very helpful to me.
  \RequirePackage{trace}%
  \errorcontextlines=100␣% And we set an error info parameter.
\fi
\ifdtraceon  \newcommand*\ifdtraceon{\if@debug\afterfi\traceon\fi}
\ifdtraceoff  \newcommand*\ifdtraceoff{\if@debug\traceoff\fi}
```

We load the core package:

```
\RequirePackage{gmdoc}
\ifgmcc@oldfonts
```

```
  \@ifpackageloaded{lmodern}{% The Latin Modern font family provides a light
      condensed typewriter font that seems to be the most suitable for the margin-
      par CS marking.
\marginpartt    \def\marginpartt{\normalfont\fontseries{lc}\ttfamily}}{}%
\else
\marginpartt    \def\marginpartt{\fontspec{LMTypewriter10␣LightCondensed}}%
\fi

\ifnum1=0\csname␣gmcc@PAGELLA\endcsname\relax
  \RequirePackage{pxfonts,tgpagella,qpxmath}%
\fi

\raggedbottom

\setcounter{secnumdepth}{0}% We wish only the parts and chapters to be num-
    bered.

\thesection \renewcommand*\thesection{\arabic{section}}% isn't it redundant at the above
    setting?

\@ifnotmw{}{%
  \@ifclassloaded{mwart}{% We set the indentation of Contents:
    \SetTOCIndents{{}{\quad}{\quad}{\quad}{%
        \quad}{\quad}{\quad}}}{% for mwart
        ...
    \SetTOCIndents{{}{\bf9.\enspace}{\quad}{\quad}{%
        \quad}{\quad}{\quad}}}% and for the two other
        mwclss.
  \pagestyle{outer}}% We set the page numbers to be printed in the outer and
    bottom corner of the page.

\titlesetup \def\titlesetup{\bfseries\sffamily}% We set the title(s) to be boldface and
    sans serif.

\if@gmccnochanges\let\RecordChanges\relax\fi% If the nochanges option is
    on, we discard writing outto the .glo file.

\RecordChanges% We turn the writing the \changes outto the .glo file if not the
    above.

\dekclubs*% We declare the club sign | to be a shorthand for \verb*.
\edverbs% to redefine \[ so that it puts a shortverb in a \hbox.
\smartunder% and we declare the _ char to behave as usual in the math mode and
    outside math to be just an uderscore.

\exhyphenpenalty\hyphenpenalty% 'cause mwcls set it =10000 due to Polish cus-
    toms.

\RequirePackage{amssymb}
\EOFMark \def\EOFMark{\rightline{\ensuremath{\square}}}

\DoNotIndex{\@nx␣\@xa␣%
}

\endinput
```

c. The gmutils Package[1]

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Many thanks to my TeX Guru Marcin Woliński for his TeXnical support.

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{gmutils}
      [2008/11/22 v0.97 some rather TeXnical macros, some of them
           tricky (GM)]
```

Intro

The gmutils.sty package provides some macros that are analogous to the standard LaTeX ones but extend their functionality, such as `\@ifnextcat`, `\addtomacro` or `\begin(*)`. The others are just conveniences I like to use in all my TeX works, such as `\afterfi`, `\pk` or `\cs`.

I wouldn't say they are only for the package writers but I assume some nonzero (La)TeX-awareness of the user.

For details just read the code part.

The remarks about installation and compiling of the documentation are analogous to those in the chapter gmdoc.sty and therefore ommitted.

Contents of the gmutils.zip archive

The distribution of the gmutils package consists of the following three files and a TDS-compliant archive.

gmutils.sty
README
gmutils.pdf
gmutils.tds.zip

```
\ifx\XeTeXversion\relax
  \let\XeTeXversion\@undefined% If someone earlier used \@ifundefined{%
      % XeTeXversion} to test whether the engine is XeTeX, then \XeTeXversion
      is defined in the sense of ε-TeX tests. In that case we \let it to something
      really undefined. Well, we might keep sticking to \@ifundefined, but it's
      a macro and it eats its arguments, freezing their catcodes, which is not what
      we want in line 3749.
```

[1] This file has version number v0.97 dated 2008/11/22.

```
\fi
\ifdefined\XeTeXversion
\XeTeXinputencoding␣utf-8␣% we use Unicode dashes later in this file.
\fi% and if we are not in XeTeX, we skip them thanks to XeTeX-test.
```

A couple of abbreviations

```
\let\@xa\expandafter
\let\@nx\noexpand
\def\@xau{\@xa\unexpanded\@xa}
\def\pdef{\protected\def}
```

And this one is defined, I know, but it's not `\long` with the standard definition and I want to be able to `\gobble` a `\par` sometimes.

```
\long\def\gobble#1{}
\let\@gobble\gobble
\let\gobbletwo\@gobbletwo
\long\pdef\provide#1{%
  \ifdefined#1%
    \ifx\relax#1\afterfifi{\def#1}%
    \else\afterfifi{\gmu@gobdef}%
    \fi
  \else\afterfi{\def#1}%
  \fi}
\long\def\gmu@gobdef#1#{%
  \def\gmu@tempa{}% it's a junk macro assignment to absorb possible prefixes.
  \@gobble}
\def\pprovide{\protected\provide}
```

Note that both `\provide` and `\pprovide` may be prefixed with `\global`, `\outer`, `\long` and `\protected` because the prefixes stick to `\def` because all before it is expandable. If the condition(s) is false (`#1` is defined) then the prefixes are absorbed by a junk assignment.

Note moreover that unlike LaTeX's `\providecommand`, our `\(p)provide` allow any parameters string just like `\def` (because they just *expand* to `\def`).

```
\long\def\@nameedef#1#2{%
  \@xa\edef\csname#1\endcsname{#2}}
```

`\firstofone` and the queer `\catcode`s

Remember that once a macro's argument has been read, its `\catcodes` are assigned forever and ever. That's what is `\firstofone` for. It allows you to change the `\catcodes` locally for a definition *outside* the changed `\catcodes`' group. Just see the below usage of this macro 'with TeX's eyes', as my TeX Guru taught me.

```
\long\def\firstofone#1{#1}
```

The next command, `\foone`, is intended as two-argument for shortening of the `\begingroup...\firstofone{\endgroup...}` hack.

```
\long\def\foone#1{\begingroup#1\egfirstofone}
\long\def\egfirstofone#1{\endgroup#1}
\long\def\fooatletter{\foone\makeatletter}
```

Global Boolean switches

The \newgif declaration's effect is used even in the LaTeX 2ε source by redefining some particular user defined ifs (UD-ifs henceforth) step by step. The goal is to make the UD-if's assignment global. I needed it at least twice during gmdoc writing so I make it a macro. It's an almost verbatim copy of LaTeX's \newif modulo the letter *g* and the \global prefix. (File d: ltdefns.dtx Date: 2004/02/20 Version v1.3g, lines 139–150)

\newgif
```
\pdef\newgif#1{%
  {\escapechar\m@ne
    \global\let#1\iffalse
    \@gif#1\iftrue
    \@gif#1\iffalse
  }}
```

'Almost' is also in the detail that in this case, which deals with \global assignments, we don't have to bother with storing and restoring the value of \escapechar: we can do all the work inside a group.

\@gif
```
\def\@gif#1#2{%
  \protected\@xa\gdef\csname\@xa\@gobbletwo\string#1%
  g% the letter g for '\global'.
  \@xa\@gobbletwo\string#2\endcsname
  {\global\let#1#2}}
\pdef\newif#1{% We not only make \newif \protected but also make it to define
        \protected assignments so that premature expansion doesn't affect \if...
        % \fi nesting.
  \count@\escapechar␣\escapechar\m@ne
  \let#1\iffalse
  \@if#1\iftrue
  \@if#1\iffalse
  \escapechar\count@}
```

\@if
```
\def\@if#1#2{%
  \protected␣\@xa\def\csname\@xa\@gobbletwo\string#1%
  \@xa\@gobbletwo\string#2\endcsname
  {\let#1#2}}
```

\hidden@iffalse \hidden@iftrue
```
\pdef\hidden@iffalse{\iffalse}
\pdef\hidden@iftrue{\iftrue}
```

After \newgif\iffoo you may type {\foogtrue} and the \iffoo switch becomes globally equal \iftrue. Simili modo \foogfalse. Note the letter *g* added to underline globalness of the assignment.

If for any reason, no matter how queer ;-) may it be, you need *both* global and local switchers of your \if . . . , declare it both with \newif and \newgif.

Note that it's just a shorthand. \global\if⟨*switch*⟩true/false *does* work as expected.

There's a trouble with \refstepcounter: defining \@currentlabel is local. So let's \def a \global version of \refstepcounter.

Warning. I use it because of very special reasons in gmdoc and in general it is probably not a good idea to make \refstepcounter global since it is contrary to the original LaTeX approach.

\grefstepcounter
```
\pdef\grefstepcounter#1{%
  {\let\protected@edef=\protected@xdef\refstepcounter{#1}}}
```

Naïve first try \globaldefs=\tw@ raised an error unknown␣command␣\reserved@e. The matter was to globalize \protected@edef of \@currentlabel.

Thanks to using the true \refstepcounter inside, it observes the change made to \refstepcounter by hyperref.

2008/08/10 I spent all the night debugging \penalty 10000 that was added after a hypertarget in vertical mode. I didn't dare to touch hyperref's guts, so I worked it around with ensuring every \grefstepcounter to be in hmode:

\hgrefstepcounter
```
\pdef\hgrefstepcounter#1{%
  \ifhmode\leavevmode\fi\grefstepcounter{#1}}
```

By the way I read some lines from *The TEXbook* and was reminded that \unskip strips any last skip, whether horizontal or vertical. And I use \unskip mostly to replace a blank space with some fixed skip. Therefore define

\hunskip
```
\pdef\hunskip{\ifhmode\unskip\fi}
```

Note the two macros defined above are \protected. I think it's a good idea to make \protected all the macros that contain assignments. There is one more thing with \ifhmode: it can be different at the point of \edef and at the point of execution.

Another shorthand. It may decrease a number of \expandafters e.g.

\glet
```
\def\glet{\global\let}
```

LaTeX provides a very useful \g@addto@macro macro that adds its second argument to the current definition of its first argument (works iff the first argument is a no argument macro). But I needed it some times in a document, where @ is not a letter. So:

\gaddtomacro
```
\let\gaddtomacro=\g@addto@macro
```

The redefining of the first argument of the above macro(s) is \global. What if we want it local? Here we are:

\addto@macro
```
\long\def\addto@macro#1#2{%
  \toks@\@xa{#1#2}%
  \edef#1{\the\toks@}%
}% (\toks@ is a scratch register, namely \toks0.)
```

And for use in the very document,

\addtomacro
```
\let\addtomacro=\addto@macro
```

2008/08/09 I need to prepend something not add at the end—so

\prependtomacro
```
\long\def\prependtomacro#1#2{%
  \edef#1{\unexpanded{#2}\@xa\unexpanded\@xa{#1}}}
```

Note that \prependtomacro can be prefixed.

\addtotoks
```
\long\def\addtotoks#1#2{%
  #1=\@xa{\the#1#2}}
```

\@emptify
\emptify
```
\newcommand*\@emptify[1]{\let#1=\@empty}
\@ifdefinable\emptify{\let\emptify\@emptify}
```

Note the two following commands are in fact one-argument.

\g@emptify
\gemptify
```
\newcommand*\g@emptify{\global\@emptify}
\@ifdefinable\gemptify{\let\gemptify\g@emptify}
```

\@relaxen
\relaxen
```
\newcommand\@relaxen[1]{\let#1=\relax}
\@ifdefinable\relaxen{\let\relaxen\@relaxen}
```

Note the two following commands are in fact one-argument.

\g@relaxen
\grelaxen
```
\newcommand*\g@relaxen{\global\@relaxen}
\@ifdefinable\grelaxen{\let\grelaxen\g@relaxen}
```

\gm@ifundefined—a test that doesn't create any hash entry unlike \@ifundefined

I define it under another name not redefine \@ifundefined because I can imagine an odd case when something works thanks to \@ifundefined's 'relaxation effect'.

\gm@ifundefined
```
\long\def\gm@ifundefined#1{% not \protected because expandable.
  \ifcsname#1\endcsname% defined
    \@xa\ifx\csname␣#1\endcsname\relax% but as \relax
      \afterfifi\@firstoftwo%
    \else% defined and not \relax
      \afterfifi\@secondoftwo%
    \fi
  \else% not defined
    \afterfi\@firstoftwo%
  \fi}
```

\gm@testdefined
```
\long\def\gm@testdefined#1\iftrue{% This is a macro that expands to \iftrue
      or \iffalse depending on whether it's argument is defined in the LaTeX
      sense. Its syntax requires an \iftrue to balance \ifs with \fis.
  \csname
  \ifdefined#1%
    \ifx#1\relax
       iffalse%
    \else␣iftrue%
    \fi
  \else␣iffalse%
  \fi\endcsname
}
```

\gm@testundefined
```
\long\def\gm@testundefined#1\iftrue{% we expand the last macro two levels.
      We repeat the parameter string to force the proper syntax.
  \@xa\@xa\@xa\unless\gm@testdefined#1\iftrue}
```

Storing and restoring the catcodes of specials

\gmu@storespecials
```
\newcommand*\gmu@storespecials[1][]{% we provide a possibility of adding
      stuff. For usage see line ??.
  \def\do##1{\catcode`\@nx##1=\the\catcode`##1\relax}%
  \edef\gmu@restorespecials{\dospecials\do\^^M#1}}
```

\gmu@septify
```
\pdef\gmu@septify{% restoring the standard catcodes of specials. The name is the
      opposite of 'sanitize' :-) . It restores also the original catcode of ^^M
  \def\do{\relax\catcode`}%
  \do\␣10\do\\0\do\{1\do\}2\do\$3\do\&4%
  \do\#6\do\^7\do\_8\do\%14\do\~13\do\^^M5\relax}
```

From the ancient xparse of TEXLive 2007

The code of this section is rewritten contents of the xparse package version 0.17 dated 1999/09/10, the version available in TEX Live 2007-13, in Ubuntu packages at least. It's a stub 'im Erwartung' (Schönberg) for the LATEX3 bundle and it does what I want, namely defines \DeclareDocumentCommand. I rewrote the code to use the usual catcodes (only with @ a letter) and not to use the ldcsetup package (which caused an error of undefined cs\KV@def).

Well, I add the \protected prefix to the first macro.

After exchange of some mails with Morten Høgholm and trying xparse of 2008/08/03 svn 748 (which beautifully spoils the catcodes) I wrap the ancient code in a conditional to avoid name collision if someone loads xparse before gmutils

```
\gm@testundefined\DeclareDocumentCommand\iftrue

\unless\ifdefined\@temptokenb
\@temptokenb \newtoks\@temptokenb
\fi

\xparsed@args \newtoks\xparsed@args

\DeclareDocumentCommand \long\def\DeclareDocumentCommand#1#2#3{%
      % #1 command to be defined,
      % #2 arguments specification,
      % #3 definition body.
  \@tempcnta\z@
  \toks@{}%
  \@temptokena\toks@
  \@temptokenb\toks@
  \@ddc#2X% X is the guardian of parsing.
  \protected\edef#1{% The \protected prefix is my (GM) addition.
    \@nx\@ddc@
    {\the\toks@}%
    \@xa\@nx\csname\string#1\endcsname
    \@nx#1%
  }%
  \long\@xa\def\csname\string#1\@xa\endcsname
  \the\@temptokena{#3}}

\DeclareDocumentEnvironment \long\def\DeclareDocumentEnvironment#1#2#3#4{%
  \@xa\DeclareDocumentCommand\csname#1\endcsname{#2}{%
    \xparsed@args\toks@
    #3}%
  \@xa\let\csname␣end#1\endcsname\@parsed@endenv
  \long\@xa\def\csname␣end\string\\#1\@xa\endcsname
  \the\@temptokena{#4}}

\@parsed@endenv \def\@parsed@endenv{%
  \@xa\@parsed@endenv@\the\xparsed@args}

\@parsed@endenv@ \def\@parsed@endenv@#1{%
  \csname␣end\string#1\endcsname}

\@ddc@ \def\@ddc@#1#2#3{%
  \ifx\protect\@typeset@protect
  \@xa\@firstofone
  \else
  \protect#3\@xa\@gobble
  \fi
  {\toks@{#2}#1\the\toks@}}

\@ddc \def\@ddc#1{%
  \ifx#1X%
  \else
  \ifx#1m%
  \addto@hook\@temptokenb␣m%
```

```
    \else
    \toks@\@xa{%
      \the\@xa\toks@
      \csname␣@ddc@\the\@temptokenb\@xa\endcsname
      \csname␣@ddc@#1\endcsname}%
    \@temptokenb{}%
    \fi
    \advance\@tempcnta\@ne
    \@temptokena\@xa{%
      \the\@xa\@temptokena\@xa##\the\@tempcnta}%
    \@xa
    \@ddc
    \fi}
\@ddc@s \long\def\@ddc@s#1\toks@{%
    \@ifstar
    {\addto@hook\toks@\BooleanTrue#1\toks@}%
    {\addto@hook\toks@\BooleanFalse#1\toks@}}
\@ddc@m \long\def\@ddc@m#1\toks@#2{%
    \addto@hook\toks@{{#2}}#1\toks@}%
\@ddc@o \long\def\@ddc@o#1\toks@{%
    \@ifnextchar[%
    {\@ddc@o@{#1}}
    {\addto@hook\toks@\NoValue#1\toks@}}
\@ddc@o@ \long\def\@ddc@o@#1[#2]{%
    \addto@hook\toks@{{#2}}#1\toks@}
 \@ddc \def\@ddc#1{%
    \ifx#1X%
    \perhaps@grab@ms
    \else
    \ifx#1m%
    \addto@hook\@temptokenb␣m%
    \else
    \toks@\@xa{%
      \the\@xa\toks@
      \csname␣@ddc@x\the\@temptokenb\@xa\endcsname
      \csname␣@ddc@#1\endcsname}%
    \@temptokenb{}%
    \ifx#1O%
    \let\next@ddc\grab@default
    \else
    \ifx#1C%
    \let\next@ddc\grab@default
    \fi
    \fi
    \fi
    \advance\@tempcnta\@ne
    \@temptokena\@xa{%
      \the\@xa\@temptokena\@xa##\the\@tempcnta}%
    \@xa
    \next@ddc
    \fi
```

```
}%

\let\next@ddc\@ddc
\def\grab@default#1{%
  \toks@\@xa{%
    \the\toks@
    {#1}}%
  \let\next@ddc\@ddc
  \@ddc
}

\long\def\@ddc@O#1#2\toks@{%
  \@ifnextchar[%
  {\@ddc@o@{#2}}%
  {\addto@hook\toks@{{#1}}#2\toks@}}

\long\def\@ddc@c#1\toks@{%
  \@ifnextchar(%
  {\@ddc@c@#1}%
  {\PackageError{gmutils/xparse}{Missing~coordinate~argument}%
    {A~value~of~(0,0)~is~assumed}%
    \addto@hook\toks@{{oo}}#1\toks@}%
}

\long\def\@ddc@c@#1(#2,#3){%
  \addto@hook\toks@{{{#2}{#3}}}#1\toks@}

\long\def\@ddc@C#1#2\toks@{%
  \@ifnextchar(%
  {\@ddc@c@#2}%
  {\addto@hook\toks@{{#1}}#2\toks@}}

\let\perhaps@grab@ms\relax
\def\grab@ms{%
  \toks@\@xa{%
    \the\@xa\toks@
    \csname␣@ddc@x\the\@temptokenb\endcsname
  }}

\let\@ddc@m\undefined

\long\def\@ddc@xm#1\toks@#2{%
  \addto@hook\toks@{{#2}}#1\toks@}

\long\def\@ddc@xmm#1\toks@#2#3{%
  \addto@hook\toks@{{#2}{#3}}#1\toks@}

\long\def\@ddc@xmmm#1\toks@#2#3#4{%
  \addto@hook\toks@{{#2}{#3}{#4}}#1\toks@}

\long\def\@ddc@xmmmm#1\toks@#2#3#4#5{%
  \addto@hook\toks@{{#2}{#3}{#4}{#5}}#1\toks@}

\long\def\@ddc@xmmmmm#1\toks@#2#3#4#5#6{%
  \addto@hook\toks@{{#2}{#3}{#4}{#5}{#6}}#1\toks@}

\long\def\@ddc@xmmmmmm#1\toks@#2#3#4#5#6#7{%
  \addto@hook\toks@{{#2}{#3}{#4}{#5}{#6}{#7}}#1\toks@}

\long\def\@ddc@xmmmmmmm#1\toks@#2#3#4#5#6#7#8{%
  \addto@hook\toks@{{#2}{#3}{#4}{#5}{#6}{#7}{#8}}#1\toks@}
```

```
\@ddc@xmmmmmmmm
\@ddc@xmmmmmmmmm
\DeclareDocumentEnvironment
\IfSomethingTF
\something@in
\IfSomethingT
\something@in
\IfSomethingF
\something@in
\If@SomethingTF
\something@tmp
\@secondofthree
\@thirdofthree
\NoValue
\NoValueInIt
\IfNoValueTF
\IfNoValueT
\IfNoValueF
\IfValueTF
\BooleanFalse
\BooleanTrue
\IfBooleanTF
```

```
\long\def\@ddc@xmmmmmmmm#1\toks@#2#3#4#5#6#7#8#9{%
  \addto@hook\toks@{{#2}{#3}{#4}{#5}{#6}{#7}{#8}{#9}}#1\toks@}
\long\def\@ddc@xmmmmmmmmm\the\toks@#1#2#3#4#5#6#7#8#9{%
  \addto@hook\toks@{{#1}{#2}{#3}{#4}{#5}{#6}{#7}{#8}{#9}}\the%
       \toks@}
\let\@ddc@x\relax
\long\def\DeclareDocumentEnvironment#1#2#3#4{%
  \@xa\DeclareDocumentCommand\csname#1\endcsname{#2}{%
    #3}%
  \@namedef{end#1}{#4}%
}
\let\@parsed@endenv\undefined
\let\@parsed@endenv@\undefined
\def\IfSomethingTF#1{\def\something@in{#1}\If@SomethingTF}
\def\IfSomethingT#1#2#3{\def\something@in{#1}%
  \If@SomethingTF{#2}{#3}\@empty}
\def\IfSomethingF#1#2#3{\def\something@in{#1}%
  \If@SomethingTF{#2}\@empty{#3}}
\def\If@SomethingTF#1{%
  \def\something@tmp{#1}%
  \ifx\something@tmp\something@in
  \@xa\@secondofthree
  \else
  \@xa\def\@xa\something@tmpb\@xa{#1}%
  \ifx\something@tmp\something@tmpb
  \@xa\@xa\@xa\@thirdofthree
  \else
  \@xa\@xa\@xa\@firstofone
  \fi
  \fi
  {\@xa\If@SomethingTF\@xa{#1}}%
}
\long\def\@secondofthree#1#2#3{#2}
\long\def\@thirdofthree#1#2#3{#3}
\def\NoValue{-NoValue-}
\def\NoValueInIt{\NoValue}
\def\IfNoValueTF{\IfSomethingTF\NoValue}
\def\IfNoValueT{\IfSomethingT\NoValue}
\def\IfNoValueF{\IfSomethingF\NoValue}
\def\IfValueTF#1#2#3{\IfNoValueTF{#1}{#3}{#2}}
\let\IfValueT\IfNoValueF
\let\IfValueF\IfNoValueT
\def\BooleanFalse{TF}
\def\BooleanTrue{TT}
\def\IfBooleanTF#1{%
  \if#1%
  \@xa\@firstoftwo
  \else
  \@xa\@secondoftwo
  \fi
}
```

```
\IfBooleanT   \def\IfBooleanT#1#2{%
                \IfBooleanTF{#1}{#2}\@empty
              }
\IfBooleanF   \def\IfBooleanF#1{%
                \IfBooleanTF{#1}\@empty
              }
              \fi% of \unless\ifdefined\DeclareDocumentCommand.
```

Ampulex Compressa-like modifications of macros

Ampulex Compressa is a wasp that performs brain surgery on its victim cockroach to lead it to its lair and keep alive for its larva. Well, all we do here with the internal LaTeX macros resembles Ampulex's actions but here is a tool for a replacement of part of macro's definition.

The `\ampulexdef` command takes its `#2` which has to be a macro and replaces part of its definition delimited with `#5` and `#6` with the replacement `#7`. The redefinition may be prefixed with `#1`. `#2` may have parameters and for such a macro you have to set the parameters string and arguments string (the stuff to be taken by the one-step expansion of the macro) as the optional `[#3]` and `[#4]`. . If `\ampulexdef` doesn't find the start and end tokens in the meaning of the macro, it does nothing to it. You have to write `####` instead of `#` or you can use `\ampulexhash` as well. For an example use see line 1718.

```
\ampulexdef   \DeclareDocumentCommand\ampulexdef{O{}mO{}O{}mmm}{%
                % [#1] definition prefix, empty by default,
                % #2 macro to be redefined,
                % [#3] \def parameters string, empty by default,
                % [#4] definition body parameters to be taken in a one-step expansion of the
                    redefined macro, empty by default,
                % #5 start token(s),
                % #6 end token(s)
                % #7 replacement.
```

For the example of usage see 1718.

```
\gmu@tempa      \def\gmu@tempa{#5}%
\gmu@tempb      \def\gmu@tempb{#6}%
\gmu@tempc      \def\gmu@tempc{#7}% we wrap the start, end and replacement tokens in macros
                    to avoid unbalanced \ifs.
                \edef\gmu@tempd{%
                  \long\def\@nx\gmu@tempd
                  ####1\all@other\gmu@tempa
                  ####2\all@other\gmu@tempb
                  ####3\@nx\gmu@tempd{%
                    \@ifempty{####3}{\hidden@iffalse}{\hidden@iftrue}}}%
                \gmu@tempd% it defines \gmu@tempc to produce an open \if depending on whether
                    the start and end token(s) are found in the meaning of #2.
                \edef\gmu@tempe{%
                  \@nx\gmu@tempd\all@other#2%
                  \all@other\gmu@tempa
                  \all@other\gmu@tempb\@nx\gmu@tempd
                }%
                \gmu@tempe% we apply the checker and it produces an open \if.
                \edef\gmu@tempd{%
```

```
    \long\def\@nx\gmu@tempd
    ####1\@xa\unexpanded\@xa{\gmu@tempa}%
    ####2\@xa\unexpanded\@xa{\gmu@tempb}%
    ####3\@nx\ampulexdef{% we define a temporary macro with the parameters
          delimited with the 'start' and 'end' parameters of \ampulexdef.
      \@nx\unexpanded{####1}%
      \@nx\@xa\@nx\unexpanded
      \@nx\@xa{\@nx\gmu@tempc}% we replace the part of the redefined macro's
           meaning with the replacement text.
      \@nx\unexpanded{####3}}}%
  \gmu@tempd
  \edef\gmu@tempf{#4}%
  \edef\gmu@tempe{%
    #1\def\@nx#2#3{%
      \@xa\@xa\@xa\gmu@tempd\@xa#2\gmu@tempf\ampulexdef}}%
  \gmu@tempe
  \fi}
```

\ampulexhash
```
\def\ampulexhash{####}% for your convenience (not to count the hashes).
```

For the heavy debugs I was doing while preparing gmdoc, as a last resort I used `\showlists`. But this command alone was usually too little: usually it needed setting `\showboxdepth` and `\showboxbreadth` to some positive values. So,

\gmshowlists
```
\def\gmshowlists{\showboxdepth=1000␣\showboxbreadth=1000␣%
     \showlists}
```

\nameshow
```
\newcommand\nameshow[1]{\@xa\show\csname#1\endcsname}
```
\nameshowthe
```
\newcommand\nameshowthe[1]{\@xa\showthe\csname#1\endcsname}
```

Note that to get proper `\showthe\my@dimen14` in the 'other' `@`'s scope you write `\nameshowthe{my@dimen}14`.

Standard `\string` command returns a string of 'other' chars except for the space, for which it returns ␣10. In gmdoc I needed the spaces in macros' and environments' names to be always 12, so I define

\xiistring
```
\def\xiistring#1{%
  \if\@nx#1\xiispace
    \xiispace
  \else
    \string#1%
  \fi}
```

\@ifnextcat, \@ifnextac

As you guess, we `\def \@ifnextcat` à la `\@ifnextchar`, see LaTeX 2ε source dated 2003/12/01, file d, lines 253–271. The difference is in the kind of test used: while `\@ifnextchar` does `\ifx`, `\@ifnextcat` does `\ifcat` which means it looks not at the meaning of a token(s) but at their `\catcode`(s). As you (should) remember from *The TEXbook*, the former test doesn't expand macros while the latter does. But in `\@ifnextcat` the peeked token is protected against expanding by `\noexpand`. Note that the first parameter is not protected and therefore it shall be expanded if it's a macro. Because an assignment is involved, you can't test whether the next token is an active char.

\@ifnextcat
```
\long\def\@ifnextcat#1#2#3{%
```

```
  \def\reserved@d{#1}%
  \def\reserved@a{#2}%
  \def\reserved@b{#3}%
  \futurelet\@let@token\@ifncat}
```

\@ifncat

```
\def\@ifncat{%
  \ifx\@let@token\@sptoken
    \let\reserved@c\@xifncat
  \else
    \ifcat\reserved@d\@nx\@let@token
      \let\reserved@c\reserved@a
    \else
      \let\reserved@c\reserved@b
    \fi
  \fi
  \reserved@c}
{\def\:{\let\@sptoken=␣}␣\global\:␣% this makes \@sptoken a space token.
\def\:{\@xifncat}␣\@xa\gdef\:␣{\futurelet\@let@token\@ifncat}}
```

Note the trick to get a macro with no parameter and requiring a space after it. We do it inside a group not to spoil the general meaning of `\:` (which we extend later).

The next command provides the real `\if` test for the next token. *It* should be called `\@ifnextchar` but that name is assigned for the future `\ifx` text, as we know. Therefore we call it `\@ifnextif`.

\@ifnextif

```
\long\pdef\@ifnextif#1#2#3{%
  \def\reserved@d{#1}%
  \def\reserved@a{#2}%
  \def\reserved@b{#3}%
  \futurelet\@let@token\@ifnif}
```

\@ifnif

```
\def\@ifnif{%
  \ifx\@let@token\@sptoken
    \let\reserved@c\@xifnif
  \else
    \if\reserved@d\@nx\@let@token
      \let\reserved@c\reserved@a
    \else
      \let\reserved@c\reserved@b
    \fi
  \fi
  \reserved@c}
{\def\:{\let\@sptoken=␣}␣\:␣% this makes \@sptoken a space token.
\def\:{\@xifnif}␣\@xa\gdef\:␣{\futurelet\@let@token\@ifnif}}
```

But how to peek at the next token to check whether it's an active char? First, we look with `\@ifnextcat` whether there stands a group opener. We do that to avoid taking a whole `{...}` as the argument of the next macro, that doesn't use `\futurelet` but takes the next token as an argument, tests it and puts back intact.

\@ifnextac

```
\long\pdef\@ifnextac#1#2{%
  \@ifnextcat\bgroup{#2}{\gm@ifnac{#1}{#2}}}
```

\gm@ifnac

```
\long\def\gm@ifnac#1#2#3{%
  \ifcat\@nx~\@nx#3\afterfi{#1#3}\else\afterfi{#2#3}\fi}
```

Yes, it won't work for an active char `\let` to {$_1$, but it *will* work for an active char `\let` to a char of catcode $\neq 1$. (Is there anybody on Earth who'd make an active char working as `\bgroup`?)

Now, define a test that checks whether the next token is a genuine space, ␣$_{10}$ that is. First define a cs let such a space. The assignment needs a little trick (*The TEXbook* appendix D) since `\let`'s syntax includes one optional space after =.

```
\let\gmu@reserveda\*%
\def\*{%
  \let\*\gmu@reserveda
  \let\gm@letspace=␣}%
\*␣%
```

```
\def\@ifnextspace#1#2{%
  \let\gmu@reserveda\*%
  \def\*{%
    \let\*\gmu@reserveda
    \ifx\@let@token\gm@letspace\afterfi{#1}%
    \else\afterfi{#2}%
    \fi}%
  \futurelet\@let@token\*}
```

First use of this macro is for an active - that expands to `---` if followed by a space. Another to make dot checking whether is followed by ~ without gobbling the space if it occurs instead.

Now a test if the next token is an active line end. I use it in gmdoc and later in this package for active long dashes.

```
\foone\obeylines{%
  \long\pdef\@ifnextMac#1#2{%
    \@ifnextchar^^M{#1}{#2}}}
```

`\afterfi` and pals

It happens from time to time that you have some sequence of macros in an `\if...` and you would like to expand `\fi` before expanding them (e.g., when the macros should take some tokens next to `\fi...` as their arguments. If you know how many macros are there, you may type a couple of `\expandafter`s and not to care how terrible it looks. But if you don't know how many tokens will there be, you seem to be in a real trouble. There's the Knuthian trick with `\next`. And here another, revealed to me by my TEX Guru.

I think the situations when the Knuthian (the former) trick is not available are rather seldom, but they are imaginable at least: the `\next` trick involves an assignment so it won't work e.g. in `\edef`.

```
\def\longafterfi{%
  \long\def\afterfi##1##2\fi{\fi##1}}
\longafterfi
```

And two more of that family:

```
\long\def\afterfifi#1#2\fi#3\fi{\fi\fi#1}
\long\def\afteriffifi#1#2\fi#3\fi{\fi#1}
```

Notice the refined elegance of those macros, that cover both 'then' and 'else' cases thanks to #2 that is discarded.

```
\afterififfifi 1011 \long\def\afterififfifi#1#2\fi#3\fi#4\fi{\fi#1}
\afteriffifi 1012 \long\def\afteriffifi#1#2\fi#3\fi#4\fi{\fi\fi#1}
\afterfifi 1013 \long\def\afterfifi#1#2\fi#3\fi#4\fi{\fi\fi\fi#1}
```

Environments redefined

Almost an environment or redefinition of \begin

We'll extend the functionality of \begin: the non-starred instances shall act as usual and we'll add the starred version. The difference of the latter will be that it won't check whether the 'environment' has been defined so any name will be allowed.

This is intended to structure the source with named groups that don't have to be especially defined and probably don't take any particular action except the scoping.

(If the \begin*'s argument is a (defined) environment's name, \begin* will act just like \begin.)

Original LaTeX's \begin:

```
\def\begin#1{%
  \@ifundefined{#1}%
    {\def\reserved@a{\@latex@error{Environment #1
     undefined}\@eha}}%
    {\def\reserved@a{\def\@currenvir{#1}%
        \edef\@currenvline{\on@line}%
        \csname #1\endcsname}}%
    \@ignorefalse
    \begingroup\@endpefalse\reserved@a}
```

```
\@begnamedgroup 1045 \long\def\@begnamedgroup#1{%
1046   \@ignorefalse% not to ignore blanks after group
1047   \begingroup\@endpefalse
1048   \edef\@currenvir{#1}% We could do recatcoding through \string but all the
           name 'other' could affect a thousand packages so we don't do that and we'll
           recatcode in a testing macro, see line 1093.
1052   \edef\@currenvline{\on@line}%
1053   \csname␣#1\endcsname}% if the argument is a command's name (an environ-
           ment's e.g.), this command will now be executed. (If the corresponding
           control sequence hasn't been known to TeX, this line will act as \relax.)
```

Let us make it the starred version of \begin.

```
\begin* 1062 \def\begin{\@ifstar{\@begnamedgroup}{%
\begin 1063        \@begnamedgroup@ifcs}}
\@begnamedgroup@ifcs 1066 \def\@begnamedgroup@ifcs#1{%
1067   \ifcsname#1\endcsname\afterfi{\@begnamedgroup{#1}}%
1068   \else\afterfi{\@latex@error{Environment␣#1␣undefined}\@eha}%
1069   \fi}%
```

\@ifenvir and improvement of \end

It's very clever and useful that \end checks whether its argument is \ifx-equivalent \@currenvir. However, in standard LaTeX it works not quite as I would expect: Since the idea of environment is to open a group and launch the cs named in the \begin's argument. That last thing is done with \csname . . . \endcsname so the catcodes of chars are irrelevant (until they are \active, 1, 2 etc.). Thus should be also in the \end's test and therefore we ensure the compared texts are both expanded and made all 'other'.

First a (not expandable) macro that checks whether current environment is as given in #1. Why is this macro \long?—you may ask. It's \long to allow evironments such as \string\par.

\@ifenvir
```
\long\def\@ifenvir#1#2#3{%
  \edef\gmu@reserveda{\@xa\string\csname\@currenvir\endcsname}%
  \edef\gmu@reservedb{\@xa\string\csname#1\endcsname}%
  \ifx\gmu@reserveda\gmu@reservedb\afterfi{#2}%
  \else\afterfi{#3}%
  \fi}
```

\@checkend
```
\def\@checkend#1{\@ifenvir{#1}{}{\@badend{#1}}}
```

Thanks to it you may write \begin{macrocode*} with $*_{12}$ and end it with \end{macrocode*} with $*_{11}$ (that was the problem that led me to this solution). The error messages looked really funny:

```
! LaTeX Error: \begin{macrocode*} on input line 1844 ended by
    \end{macrocode*}.
```

You might also write also \end{macrocode\star} where \star is defined as 'other' star or letter star.

From relsize

As file relsize.sty, v3.1 dated July 4, 2003 states, LaTeX 2ε version of these macros was written by Donald Arseneau asnd@triumf.ca and Matt Swift swift@bu.edu after the LaTeX 2.09 smaller.sty style file written by Bernie Cosell cosell@WILMA.BBN.COM.

I take only the basic, non-math mode commands with the assumption that there are the predefined font sizes.

\relsize
\smaller
\larger
\smallerr
\largerr

You declare the font size with \relsize{⟨n⟩} where ⟨n⟩ gives the number of steps ("mag-step" = factor of 1.2) to change the size by. E.g., $n = 3$ changes from \normalsize to \LARGE size. Negative n selects smaller fonts. \smaller == \relsize{-1}; \larger == \relsize{1}. \smallerr(my addition) == \relsize{-2}; \largerr guess yourself.

(Since \DeclareRobustCommand doesn't issue an error if its argument has been defined and it only informs about redefining, loading relsize remains allowed.)

\relsize
```
\pdef\relsize#1{%
  \ifmmode␣\@nomath\relsize\else
    \begingroup
     \@tempcnta␣% assign number representing current font size
       \ifx\@currsize\normalsize␣4\else␣␣␣% funny order is to have most
                ...
        \ifx\@currsize\small␣3\else␣␣␣␣␣␣␣% ...likely sizes checked first
         \ifx\@currsize\footnotesize␣2\else
          \ifx\@currsize\large␣5\else
           \ifx\@currsize\Large␣6\else
            \ifx\@currsize\LARGE␣7\else
             \ifx\@currsize\scriptsize␣1\else
              \ifx\@currsize\tiny␣0\else
               \ifx\@currsize\huge␣8\else
                \ifx\@currsize\Huge␣9\else
                 4\rs@unknown@warning␣% unknown state: \normalsize as
                        starting point
     \fi\fi\fi\fi\fi\fi\fi\fi\fi\fi
```

Change the number by the given increment:

```
      \advance\@tempcnta#1\relax
```

watch out for size underflow:

```
       \ifnum\@tempcnta<\z@␣\rs@size@warning{small}{\string\tiny}%
            \@tempcnta\z@␣\fi
       \@xa\endgroup
       \ifcase\@tempcnta␣␣% set new size based on altered number
          \tiny␣\or␣\scriptsize␣\or␣\footnotesize␣\or␣\small␣\or␣%
               \normalsize␣\or
          \large␣\or␣\Large␣\or␣\LARGE␣\or␣\huge␣\or␣\Huge␣\else
           \rs@size@warning{large}{\string\Huge}\Huge
\fi\fi}% end of \relsize.
```

\rs@size@warning
```
\providecommand*\rs@size@warning[2]{\PackageWarning{gmutils␣
     (relsize)}{%
 Size␣requested␣is␣too␣#1.\MessageBreak␣Using␣#2␣instead}}
```

\rs@unknown@warning
```
\providecommand*\rs@unknown@warning{\PackageWarning{gmutils␣
     (relsize)}{Current␣font␣size
 is␣unknown!␣(Why?!?)\MessageBreak␣Assuming␣\string\normalsize}}
```

And a handful of shorthands:

\larger
```
\DeclareRobustCommand*\larger[1][\@ne]{\relsize{+#1}}
```
\smaller
```
\DeclareRobustCommand*\smaller[1][\@ne]{\relsize{-#1}}
```
\textlarger
```
\DeclareRobustCommand*\textlarger[2][\@ne]{{\relsize{+#1}#2}}
```
\textsmaller
```
\DeclareRobustCommand*\textsmaller[2][\@ne]{{\relsize{-#1}#2}}
```
\largerr
```
\pdef\largerr{\relsize{+2}}
```
\smallerr
```
\pdef\smallerr{\relsize{-2}}
```

Some ‘other’ stuff

Here I define a couple of macros expanding to special chars made ‘other’. It’s important the cs are expandable and therefore they can occur e.g. inside `\csname...\endcsname` unlike e.g. cs’es `\chardefed`.

```
\foone{\catcode`\_=8␣}%
```
\subs
```
{\let\subs=_}
```

```
\foone{\@makeother\_}%
```
\xiiunder
```
{\def\xiiunder{_}}
```

```
\ifdefined\XeTeXversion
```
\xiiunder
```
  \def\xiiunder{\char"005F␣}%
  \let\_\xiiunder
\fi

\foone{\catcode`\[=1␣\@makeother\{
  \catcode`\]=2␣\@makeother\}}%
[%
```
\xiilbrace
```
  \def\xiilbrace[{]%
```
\xiirbrace
```
  \def\xiirbrace[}]%
]% of \firstofone
```

Note that LaTeX’s `\@charlb` and `\@charrb` are of catcode 11 (‘letter’), cf. The LaTeX 2_ε Source file k, lines 129–130.

Now, let's define such a smart _ (underscore) which will be usual $_8$ in the math mode and $_{12}$ ('other') outside math.

```
\foone{\catcode`\_=\active}
{%
  \newcommand*\smartunder{%
    \catcode`\_=\active
    \def_{\ifmmode\subs\else\_\fi}}}%
```

\smartunder

We define it as _ not just as \xiiunder because some font encodings don't have _ at the \char`_ position.

```
\foone{\catcode`\!=0
  \@makeother\\}
{!newcommand*!xiibackslash{\}}
```

\xiibackslash

```
\let\bslash=\xiibackslash
```

\bslash

```
\foone{\@makeother\%}
{\def\xiipercent{%}}
```

\xiipercent

```
\foone{\@makeother\&}%
{\def\xiiand{&}}
```

\xiiand

```
\foone{\@makeother\␣}%
{\def\xiispace{␣}}
```

\xiispace

```
\foone{\@makeother\#}%
{\def\xiihash{#}}
```

\xiihash

We introduce \visiblespace from Will Robertson's xltxtra if available. It's not sufficient \@ifpackageloaded{xltxtra} since \xxt@visiblespace is defined only unless no-verb option is set. 2008/08/06 I recognized the difference between \xiispace which has to be plain 'other' char (used in \xiistring) and something visible to be printed in any font.

```
\AtBeginDocument{%
  \ifdefined\xxt@visiblespace
    \let\visiblespace\xxt@visiblespace
  \else
    \let\visiblespace\xiispace
  \fi}
```

Metasymbols

I fancy also another Knuthian trick for typesetting ⟨*metasymbols*⟩ in *The TEXbook*. So I repeat it here. The inner \meta macro is copied verbatim from doc's v2.1b documentation dated 2004/02/09 because it's so beautifully crafted I couldn't resist. I only don't make it \long.

"The new implementation fixes this problem by defining \meta in a radically different way: we prevent hypenation by defining a \language which has no patterns associated with it and use this to typeset the words within the angle brackets."

```
\pdef\meta#1{%
```

\meta

"Since the old implementation of \meta could be used in math we better ensure that this is possible with the new one as well. So we use \ensuremath around \langle and \rangle. However this is not enough: if \meta@font@select below expands to \itshape it will fail if used in math mode. For this reason we hide the whole thing inside an \nfss@text box in that case."

```
    \ensuremath\langle
    \ifmmode␣\@xa␣\nfss@text␣\fi
    {%
      \meta@font@select
```

Need to keep track of what we changed just in case the user changes font inside the argument so we store the font explicitly.

```
      #1\/%
    }\ensuremath\rangle
}
```

But I define `\meta@font@select` as the brutal and explicit `\it` instead of the original `\itshape` to make it usable e.g. in the gmdoc's `\cs` macro's argument.

`\meta@font@select`
```
\def\meta@font@select{\it}
```

The below `\meta`'s drag[2] is a version of *The TEXbook*'s one.

`\<...>`
```
\def\<#1>{\meta{#1}}
```

Macros for printing macros and filenames

First let's define three auxiliary macros analogous to `\dywiz` from polski.sty: a shorthands for `\discretionary` that'll stick to the word not spoiling its hyphenability and that'll won't allow a linebreak just before nor just after themselves. The `\discretionary` TEX primitive has three arguments: `#1` 'before break', `#2` 'after break', `#3` 'without break', remember?

`\discre`
```
\def\discre#1#2#3{\leavevmode\kernosp%
  \discretionary{#1}{#2}{#3}\penalty10000\hskiposp\relax}
```
`\discret`
```
\def\discret#1{\leavevmode\kernosp%
  \discretionary{#1}{#1}{#1}\penalty10000\hskiposp\relax}
```

A tiny little macro that acts like `\-` outside the math mode and has its original meaning inside math.

```
\def\:{\ifmmode\afterfi{\mskip\medmuskip}\else\afterfi{\discret{%
    }}\fi}
```

`\vs`
```
\newcommand*{\vs}{\discre{\visiblespace}{}{\visiblespace}}
```

Then we define a macro that makes the spaces visible even if used in an argument (i.e., in a situation where re`\catcode`ing has no effect).

`\printspaces`
```
\def\printspaces#1{{\let~=\vs␣\let\␣=\vs␣\gm@pswords#1␣\@@nil}}
```
`\gm@pswords`
```
\def\gm@pswords#1␣#2\@@nil{%
  \ifx\relax#1\relax\else#1\fi
  \ifx\relax#2\relax\else\vs\penalty\hyphenpenalty\gm@pswords#2%
      \@@nil\fi}% note that in the recursive call of \gm@pswords the argument
                  string is not extended with a guardian space: it has been already
                  by \printspaces.
```

`\sfname`
```
\pdef\sfname#1{\textsf{\printspaces{#1}}}
```

`\gmu@discretionaryslash`
```
\def\gmu@discretionaryslash{\discre{/}{\hbox{}}{/}}% the
      second pseudo-argument nonempty to get \hyphenpenalty
      not \exhyphenpenalty.
```

`\file`
```
\pdef\file#1{\gmu@printslashes#1/\gmu@printslashes}
```

```
\gmu@printslashes 1364 \def\gmu@printslashes#1/#2\gmu@printslashes{%
                  1365   \sfname{#1}%
                  1366   \ifx\gmu@printslashes#2\gmu@printslashes
                  1367   \else
                  1368   \textsf{\gmu@discretionaryslash}%
                  1369   \afterfi{\gmu@printslashes#2\gmu@printslashes}\fi}
```

it allows the spaces in the filenames (and prints them as ␣).

The macro defined below I use to format the packages' names.

```
\pk 1376 \pdef\pk#1{\textsf{#1}}
```

Some (if not all) of the below macros are copied from doc and/or ltxdoc.

A macro for printing control sequences in arguments of a macro. Robust to avoid writing an explicit \ into a file. It calls \ttfamily not \tt to be usable in headings which are boldface sometimes.

```
\cs 1390 \DeclareRobustCommand*{\cs}[2][\bslash]{{%
\- 1391       \def\-{\discretionary{{\rmfamily-}}{}{}}%
   1392       \def\{{\char`\{}\def\}{\char`\}}\ttfamily␣#1#2}}
```

```
\env 1396 \pdef\env#1{\cs[]{#1}}
```

And for the special sequences like ^^A:

```
     1399 \foone{\@makeother\^}
\hathat 1400   {\pdef\hathat#1{\cs[^^]{#1}}}
```

And one for encouraging linebreaks e.g., before long verbatim words.

```
\possfil 1405 \newcommand*\possfil{\hfil\penalty1000\hfilneg}
```

The five macros below are taken from the ltxdoc.dtx.

"\cmd{\foo} Prints \foo verbatim. It may be used inside moving arguments. \cs{foo} also prints \foo, for those who prefer that syntax. (This second form may even be used when \foo is \outer)."

```
\cmd 1415 \def\cmd#1{\cs{\@xa\cmd@to@cs\string#1}}
\cmd@to@cs 1417 \def\cmd@to@cs#1#2{\char\number`#2\relax}
```

\marg{text} prints {⟨*text*⟩}, 'mandatory argument'.

```
\marg 1421 \def\marg#1{{\ttfamily\char`\{}\meta{#1}{\ttfamily\char`\}}}
```

\oarg{text} prints [⟨*text*⟩], 'optional argument'. Also \oarg[text] does that.

```
\oarg 1426 \def\oarg{\@ifnextchar[\@oargsq\@oarg}
\@oarg 1428 \def\@oarg#1{{\ttfamily[}\meta{#1}{\ttfamily]}}
\@oargsq 1429 \def\@oargsq[#1]{\@oarg{#1}}
```

\parg{te,xt} prints (⟨*te,xt*⟩), 'picture mode argument'.

```
\parg 1433 \def\parg{\@ifnextchar(\@pargp\@parg}
\@parg 1435 \def\@parg#1{{\ttfamily(}\meta{#1}{\ttfamily)}}
\@pargp 1436 \def\@pargp(#1){\@parg{#1}}
```

But we can have all three in one command.

```
     1440 \AtBeginDocument{%
\arg 1441   \let\math@arg\arg
\arg 1442   \def\arg{\ifmmode\math@arg\else\afterfi{%
     1443       \@ifnextchar[%
```

[2] Think of the drags that transform a very nice but rather standard 'auntie' ('Tante' in Deutsch) into a most adorable Queen ;-) .

```
      \@oargsq{\@ifnextchar(%
        \@pargp\marg}}\fi}%
}
```

Now you can write

`\arg{mand. arg}` to get {⟨*mand. arg*⟩},
`\arg[opt. arg]` for [⟨*opt. arg*⟩] and
`\arg(pict. arg)` for (⟨*pict. arg*⟩).
And `$\arg(1+i) = \pi/4$` for $\arg(1+i) = \pi/4$.

Storing and restoring the meanings of cses

First a Boolean switch of globalness of assignments and its verifier.

\ifgmu@SMglobal
```
\newif\ifgmu@SMglobal
```

\SMglobal
```
\pdef\SMglobal{\gmu@SMglobaltrue}
```

The subsequent commands are defined in such a way that you can 'prefix' them with `\SMglobal` to get global (re)storing.

A command to store the current meaning of a cs in another macro to temporarily redefine the cs and be able to set its original meanig back (when grouping is not recommended):

\StoreMacro
```
\pdef\StoreMacro{%
  \begingroup\makeatletter\@ifstar\egStore@MacroSt\egStore@Macro}
```

The unstarred version takes a cs and the starred version a text, which is intended for special control sequences. For storing environments there is a special command in line 1598.

\egStore@Macro
\egStore@MacroSt
```
\long\def\egStore@Macro#1{\endgroup\Store@Macro{#1}}
\long\def\egStore@MacroSt#1{\endgroup\Store@MacroSt{#1}}
```

\Store@Macro
```
\long\def\Store@Macro#1{%
  \escapechar92
  \ifgmu@SMglobal\afterfi\global\fi
  \@xa\let\csname /gmu/store\string#1\endcsname#1%
  \global\gmu@SMglobalfalse}
```

\Store@MacroSt
```
\long\def\Store@MacroSt#1{%
  \edef\gmu@smtempa{%
    \ifgmu@SMglobal\global\fi
    \@nx\let\@xa\@nx\csname/gmu/store\bslash#1\endcsname% we add
        backslash because to ensure compatibility between \(Re)StoreMacro
        and \(Re)StoreMacro*, that is. to allow writing
        e.g. \StoreMacro\kitten and then \RestoreMacro*{kitten} to
        restore the meaning of \kitten.
    \@xa\@nx\csname#1\endcsname}
  \gmu@smtempa
  \global\gmu@SMglobalfalse}% we wish the globality to be just once.
```

We make the `\StoreMacro` command a three-step to allow usage of the most inner macro also in the next command.

The starred version, `\StoreMacro*` works with csnames (without the backslash). It's first used to store the meanings of robust commands, when you may need to store not only `\foo`, but also `\csname foo \endcsname`.

The next command iterates over a list of cses and stores each of them. The cs may be separated with commas but they don't have to.

\StoreMacros
\Store@Macros
```
\long\pdef\StoreMacros{\begingroup\makeatletter\Store@Macros}
\long\def\Store@Macros#1{\endgroup
  \gmu@setsetSMglobal
  \let\gml@StoreCS\Store@Macro
  \gml@storemacros#1.}
```

\gmu@setsetSMglobal
```
\def\gmu@setsetSMglobal{%
  \ifgmu@SMglobal
    \let\gmu@setSMglobal\gmu@SMglobaltrue
  \else
    \let\gmu@setSMglobal\gmu@SMglobalfalse
  \fi}
```

And the inner iterating macro:

\gml@storemacros
\gmu@reserveda
```
\long\def\gml@storemacros#1{%
  \def\gmu@reserveda{\@nx#1}% My TeX Guru's trick to deal with \fi and such,
      i.e., to hide #1 from TeX when it is processing a test's branch without expanding.
  \if\gmu@reserveda.% a dot finishes storing.
    \global\gmu@SMglobalfalse
  \else
    \if\gmu@reserveda,% The list this macro is put before may contain commas
        and that's O.K., we just continue the work.
      \afterfifi\gml@storemacros
    \else% what is else this shall be stored.
      \gml@StoreCS{#1}% we use a particular cs to may \let it both to the storing
          macro as above and to the restoring one as below.
      \afterfifi{\gmu@setSMglobal\gml@storemacros}%
    \fi
  \fi}
```

And for the restoring

\RestoreMacro
```
\pdef\RestoreMacro{%
  \begingroup\makeatletter\@ifstar\egRestore@MacroSt%
      \egRestore@Macro}
```

\egRestore@Macro
\egRestore@MacroSt
```
\long\def\egRestore@Macro#1{\endgroup\Restore@Macro{#1}}
\long\def\egRestore@MacroSt#1{\endgroup\Restore@MacroSt{#1}}
```

\Restore@Macro
```
\long\def\Restore@Macro#1{%
  \escapechar92
  \ifgmu@SMglobal\afterfi\global\fi
  \@xa\let\@xa#1\csname␣/gmu/store\string#1\endcsname
  \global\gmu@SMglobalfalse}
```

\Restore@MacroSt
```
\long\def\Restore@MacroSt#1{%
  \edef\gmu@smtempa{%
    \ifgmu@SMglobal\global\fi
    \@nx\let\@xa\@nx\csname#1\endcsname
    \@xa\@nx\csname/gmu/store\bslash#1\endcsname}% cf. the commentary
        in line 1493.
  \gmu@smtempa
  \global\gmu@SMglobalfalse}
```

\RestoreMacros
```
\long\pdef\RestoreMacros{\begingroup\makeatletter\Restore@Macros}
```
\Restore@Macros
```
\long\def\Restore@Macros#1{\endgroup
  \gmu@setsetSMglobal
  \let\gml@StoreCS\Restore@Macro% we direct the core cs towards restoring
        and call the same iterating macro as in line 1521.
  \gml@storemacros#1.}
```

As you see, the `\RestoreMacros` command uses the same iterating macro inside, it only changes the meaning of the core macro.

And to restore *and* use immediately:

\StoredMacro
\Stored@Macro
```
\def\StoredMacro{\begingroup\makeatletter\Stored@Macro}
\long\def\Stored@Macro#1{\endgroup\Restore@Macro#1#1}
```

To be able to call a stored cs without restoring it.

\storedcsname
```
\def\storedcsname#1{%
  \csname␣/gmu/store\bslash#1\endcsname}
```

2008/08/03 we need to store also an environment.

\StoreEnvironment
```
\pdef\StoreEnvironment#1{%
  \StoreMacro*{#1}\StoreMacro*{end#1}}
```
\RestoreEnvironment
```
\pdef\RestoreEnvironment#1{%
  \RestoreMacro*{#1}\RestoreMacro*{end#1}}
```

It happended (see the definition of `\@docinclude` in gmdoc.sty) that I needed to `\relax` a bunch of macros and restore them after some time. Because the macros were rather numerous and I wanted the code more readable, I wanted to `\do` them. After a proper defining of `\do` of course. So here is this proper definition of `\do`, provided as a macro (a declaration).

\StoringAndRelaxingDo
```
\long\def\StoringAndRelaxingDo{%
  \gmu@SMdo@setscope
  \long\def\do##1{%
    \gmu@SMdo@scope
    \@xa\let\csname␣/gmu/store\string##1\endcsname##1%
    \gmu@SMdo@scope\let##1\relax}}
```
\gmu@SMdo@setscope
```
\def\gmu@SMdo@setscope{%
  \ifgmu@SMglobal\let\gmu@SMdo@scope\global
  \else\let\gmu@SMdo@scope\relax
  \fi
  \global\gmu@SMglobalfalse}
```

And here is the counter-definition for restore.

\RestoringDo
```
\long\def\RestoringDo{%
  \gmu@SMdo@setscope
  \long\def\do##1{%
    \gmu@SMdo@scope
    \@xa\let\@xa##1\csname␣/gmu/store\string##1\endcsname}}
```

Note that both `\StoringAndRelaxingDo` and `\RestoringDo` are sensitive to the `\SMglobal` 'prefix'.

And to store a cs as explicitly named cs, i.e. to `\let` one csname another (`\n@melet` not `\@namelet` becasuse the latter is defined in Till Tantau's beamer class another way) (both arguments should be text):

\n@melet
```
\def\n@melet#1#2{%
```

```
  \edef\gmu@nl@reserveda{%
    \let\@xa\@nx\csname#1\endcsname
    \@xa\@nx\csname#2\endcsname}%
  \gmu@nl@reserveda}
```

The \global prefix doesn't work with \n@melet so we define the alternative.

\gn@melet
```
\def\gn@melet#1#2{%
  \edef\gmu@nl@reserveda{%
    \global\let\@xa\@nx\csname#1\endcsname
    \@xa\@nx\csname#2\endcsname}%
  \gmu@nl@reserveda}
```

Not only preamble!

Let's remove some commands from the list to erase at begin document! Primarily that list was intended to save memory not to forbid anything. Nowadays, when memory is cheap, the list of only-preamble commands should be rethought IMO.

\not@onlypreamble
```
\newcommand\not@onlypreamble[1]{{%
  \def\do##1{\ifx#1##1\else\@nx\do\@nx##1\fi}%
  \xdef\@preamblecmds{\@preamblecmds}}}
\not@onlypreamble\@preamblecmds
\not@onlypreamble\@ifpackageloaded
\not@onlypreamble\@ifclassloaded
\not@onlypreamble\@ifl@aded
\not@onlypreamble\@pkgextension
```

And let's make the message of only preamble command's forbidden use informative a bit:

\gm@notprerr
```
\def\gm@notprerr{␣can␣be␣used␣only␣in␣preamble␣(\on@line)}
\AtBeginDocument{%
  \def\do#1{\@nx\do\@nx#1}%
  \edef\@preamblecmds{%
    \def\@nx\do##1{%
      \def##1{\@nx\PackageError{gmutils/LaTeX}%
        {\@nx\string##1␣\@nx\gm@notprerr}\@nx\@eha}}%
    \@preamblecmds}}
```

A subtle error raises: the LaTeX standard \@onlypreamble and what \document does with \@preamblecmds makes any two of 'only preamble' cs's \ifx-identical inside document. And my change makes any two cs's \ifx-different. The first it causes a problem with is standard LaTeX's \nocite that checks \ifx\@onlypreamble\document. So hoping this is a rare problem, we circumvent in with. 2008/08/29 a bug is reported by Edd Barrett that with natbib an 'extra }' error occurs so we wrap the fix in a conditional.

\gmu@nocite@ampulex
```
\def\gmu@nocite@ampulex{% we wrap the stuff in a macro to hide an open \if.
      And not to make the begin-input hook not too large. the first is the parameters
      string and the second the argument for one-level expansion of \nocite so it
      has to consist of two times less hashes than the first. Both hash strings are
      doubled to pass the first \def.
  \ampulexdef[]\nocite[####1][{{####1}}]% note the double brace around
      % #3.
  \ifx
  {\@onlypreamble\document}%
```

```
  \iftrue}
\AtBeginDocument\gmu@nocite@ampulex
```

Third person pronouns

Is a reader of my documentations 'she' or 'he' and does it make a difference?

Not to favour any gender in the personal pronouns, define commands that'll print alternately masculine and feminine pronoun of third person. By 'any' I mean not only typically masculine and typically feminine but the entire amazingly rich variety of people's genders, *including* those who do not describe themselves as 'man' or 'woman'.

One may say two pronouns is far too little to cover this variety but I could point Ursula's K. LeGuin's *The Left Hand Of Darkness* as another acceptable answer. In that moody and moderate SF novel the androgynous persons are usually referred to as 'mister', 'sir' or 'he': the meaning of reference is extended. Such an extension also my automatic pronouns do suggest. It's *not* political correctness, it's just respect to people's diversity.

gm@PronounGender
```
\newcounter{gm@PronounGender}
```

\gm@atppron
```
\newcommand*\gm@atppron[2]{%
  \stepcounter{gm@PronounGender}% remember \stepcounter is global.
  \ifodd\value{gm@PronounGender}#1\else#2\fi}
```

\heshe
```
\newcommand*\heshe{\gm@atppron{he}{she}}
```

\hisher
```
\newcommand*\hisher{\gm@atppron{his}{her}}
```

\himher
```
\newcommand*\himher{\gm@atppron{him}{her}}
```

\hishers
```
\newcommand*\hishers{\gm@atppron{his}{hers}}
```

\HeShe
```
\newcommand*\HeShe{\gm@atppron{He}{She}}
```

\HisHer
```
\newcommand*\HisHer{\gm@atppron{His}{Her}}
```

\HimHer
```
\newcommand*\HimHer{\gm@atppron{Him}{Her}}
```

\HisHers
```
\newcommand*\HisHers{\gm@atppron{His}{Hers}}
```

Improvements to mwcls sectioning commands

That is, 'Expe-ri-mente'[3] mit MW sectioning & \refstepcounter to improve mwcls's cooperation with hyperref. They shouldn't make any harm if another class (non-mwcls) is loaded.

We \refstep sectioning counters even if the sectionings are not numbered, because otherwise

1. pdfTeX cried of multiply defined \labels,
2. e.g. in a table of contents the hyperlink <rozdzia\l\␣Kwiaty␣polskie> linked not to the chapter's heading but to the last-before-it change of \ref.

```
\AtBeginDocument{% because we don't know when exactly hyperref is loaded and
    maybe after this package.
```

NoNumSecs
```
  \@ifpackageloaded{hyperref}{\newcounter{NoNumSecs}%
    \setcounter{NoNumSecs}{617}% to make \refing to an unnumbered section
      visible (and funny?).
```

\gm@hyperrefstepcounter
```
    \def\gm@hyperrefstepcounter{\refstepcounter{NoNumSecs}}%
```

\gm@targetheading
```
    \pdef\gm@targetheading#1{%
      \hypertarget{#1}{#1}}}% end of then
```

\gm@hyperrefstepcounter
```
  {\def\gm@hyperrefstepcounter{}%
```

\gm@targetheading
```
    \def\gm@targetheading#1{#1}}% end of else
```

[3] A. Berg, *Wozzeck*.

```
}% of \AtBeginDocument
```

Auxiliary macros for the kernel sectioning macro:

```
\def\gm@dontnumbersectionsoutofmainmatter{%
  \if@mainmatter\else␣\HeadingNumberedfalse␣\fi}
\def\gm@clearpagesduetoopenright{%
  \if@openright\cleardoublepage\else␣\clearpage\fi}
```

To avoid \defing of \mw@sectionxx if it's undefined, we redefine \def to gobble the definition and restore the original meaning of itself.

Why shouldn't we change the ontological status of \mw@sectionxx (not define if undefined)? Because some macros (in gmdocc e.g.) check it to learn whether they are in an mwcls or not.

But let's make a shorthand for this test since we'll use it three times in this package and maybe also somewhere else.

```
\long\def\@ifnotmw#1#2{\gm@ifundefined{mw@sectionxx}{#1}{#2}}
```

The kernel of MW's sectioning commands:

```
\@ifnotmw{}{%
\def\mw@sectionxx#1#2[#3]#4{%
  \edef\mw@HeadingLevel{\csname␣#1@level\endcsname
        \space}% space delimits level number!
  \ifHeadingNumbered
      \ifnum␣\mw@HeadingLevel>\c@secnumdepth␣%
           \HeadingNumberedfalse␣\fi
```

line below is in \gm@ifundefined to make it work in classes other than mwbk

```
      \gm@ifundefined{if@mainmatter}{}{%
           \gm@dontnumbersectionsoutofmainmatter}
  \fi
  %   \ifHeadingNumbered
  %     \refstepcounter{#1}%
  %     \protected@edef\HeadingNumber{\csname
       the#1\endcsname\relax}%
  %   \else
  %     \let\HeadingNumber\@empty
  %   \fi
  \def\HeadingRHeadText{#2}%
  \def\HeadingTOCText{#3}%
  \def\HeadingText{#4}%
  \def\mw@HeadingType{#1}%
  \if\mw@HeadingBreakBefore
    \if@specialpage\else\thispagestyle{closing}\fi
    \gm@ifundefined{if@openright}{}{%
         \gm@clearpagesduetoopenright}%
    \if\mw@HeadingBreakAfter
      \thispagestyle{blank}\else
      \thispagestyle{opening}\fi
       \global\@topnum\z@
  \fi% of \if\mw@HeadingBreakBefore
```

placement of \refstep suggested by me (GM):

```
  \ifHeadingNumbered
    \refstepcounter{#1}%
```

```
    \protected@edef\HeadingNumber{\csname␣the#1\endcsname\relax}%
  \else
    \let\HeadingNumber\@empty
    \gm@hyperrefstepcounter
  \fi% of \ifHeadingNumbered

  \if\mw@HeadingRunIn
    \mw@runinheading
  \else
    \if\mw@HeadingWholeWidth
      \if@twocolumn
        \if\mw@HeadingBreakAfter
        \onecolumn
        \mw@normalheading
        \pagebreak\relax
              \if@twoside
                \null
                \thispagestyle{blank}%
                \newpage
              \fi% of \if@twoside
        \twocolumn
        \else
          \@topnewpage[\mw@normalheading]%
        \fi% of \if\mw@HeadingBreakAfter
      \else
        \mw@normalheading
        \if\mw@HeadingBreakAfter\pagebreak\relax\fi
      \fi% of \if@twocolumn
    \else
      \mw@normalheading
      \if\mw@HeadingBreakAfter\pagebreak\relax\fi
    \fi% of \if\mw@HeadingWholeWidth
  \fi% of \if\mw@HeadingRunIn
  }
```

An improvement of MW's \SetSectionFormatting

A version of MW's \SetSectionFormatting that lets to leave some settings unchanged by leaving the respective argument empty ({} or []).

Notice: If we adjust this command for new version of MWCLS, we should name it \SetSectionFormatting and add issuing errors if the inner macros are undefined.

[#1] the flags, e.g. breakbefore, breakafter;
#2 the sectioning name, e.g. chapter, part;
#3 preskip;
#4 heading type;
#5 postskip

```
\relaxen\SetSectionFormatting
\newcommand*\SetSectionFormatting[5][\empty]{%
  \ifx\empty#1\relax\else% empty (not \empty!) #1 also launches \else.
    \def\mw@HeadingRunIn{10}\def\mw@HeadingBreakBefore{10}%
    \def\mw@HeadingBreakAfter{10}\def\mw@HeadingWholeWidth{10}%
```

\SetSectionFormatting

```
    \@ifempty{#1}{}{\mw@processflags#1,\relax}% If #1 is omitted, the flags
          are left unchanged. If #1 is given, even as [], the flags are first cleared and
          then processed again.
  \fi
  \gm@ifundefined{#2}{\@namedef{#2}{\mw@section{#2}}}{}%
  \mw@secdef{#2}{@preskip} {#3}{2 oblig.}%
  \mw@secdef{#2}{@head}    {#4}{3 oblig.}%
  \mw@secdef{#2}{@postskip}{#5}{4 oblig.}%
  \ifx\empty#1\relax
    \mw@secundef{#2@flags}{1 (optional)}%
  \else\mw@setflags{#2}%
  \fi}
\mw@secdef
\def\mw@secdef#1#2#3#4{%
        % #1 the heading name,
        % #2 the command distinctor,
        % #3 the meaning,
        % #4 the number of argument to error message.
  \@ifempty{#3}
    {\mw@secundef{#1#2}{#4}}
    {\@namedef{#1#2}{#3}}}
\mw@secundef
\def\mw@secundef#1#2{%
  \gm@ifundefined{#1}{%
    \ClassError{mwcls/gm}{%
      command \bslash#1  undefined \MessageBreak
      after \bslash SetSectionFormatting!!!\MessageBreak}{%
      Provide the #2 argument of \bslash
           SetSectionFormatting.}}{}}
```

First argument is a sectioning command (wo. the backslash) and second the stuff to be added at the beginning of the heading declarations.

```
\addtoheading
\def\addtoheading#1#2{%
    \n@melet{gmu@reserveda}{#1@head}%
    \edef\gmu@reserveda{\unexpanded{#2}\@xa\unexpanded{%
         \gmu@reserveda}}%
    \n@melet{#1@head}{gmu@reserveda}%
}
```

```
}% of \@ifnotmw's else.
```

Negative \addvspace

When two sectioning commands appear one after another (we may assume that this occurs only when a lower section appears immediately after higher), we prefer to put the *smaller* vertical space not the larger, that is, the preskip of the lower sectioning not the postskip of the higher.

For that purpose we modify the very inner macros of MWCLS to introduce a check whether the previous vertical space equals the postskip of the section one level higher.

```
\@ifnotmw{}{% We proceed only in mwcls.
```

The information that we are just after a heading will be stored in the \gmu@prevsec macro: any heading will define it as the section name and \everypar (any normal text) will clear it.

```
\@afterheading
\def\@afterheading{%
```

```
    \@nobreaktrue
    \xdef\gmu@prevsec{\mw@HeadingType}% added now
    \everypar{%
      \grelaxen\gmu@prevsec% added now. All the rest is original LaTeX.
      \if@nobreak
      \@nobreakfalse
      \clubpenalty␣\@M
      \if@afterindent␣\else
      {\setbox\z@\lastbox}%
      \fi
      \else
      \clubpenalty␣\@clubpenalty
      \everypar{}%
      \fi}}
```

If we are (with the current heading) just after another heading (one level lower I suppose), then we add the less of the higher header's post-skip and the lower header pre-skip or, if defined, the two-header-skip. (We put the macro defined below just before `\addvspace` in mwcls inner macros.)

\gmu@checkaftersec

```
\def\gmu@checkaftersec{%
  \gm@ifundefined{gmu@prevsec}{}{%
    \ifgmu@postsec% an additional switch that is true by default but may be
        turned into an \ifdim in special cases, see line 2058.
    {\@xa\mw@getflags\@xa{\gmu@prevsec}%
      \glet\gmu@reserveda\mw@HeadingBreakAfter}%
    \if\mw@HeadingBreakBefore\def\gmu@reserveda{11}\fi% if the current
        heading inserts page break before itself, all the play with vskips is irrele-
        vant.
    \if\gmu@reserveda\else
    \penalty10000\relax
    \skip\z@=\csname\gmu@prevsec␣@postskip\endcsname\relax
    \skip\tw@=\csname\mw@HeadingType␣@preskip\endcsname\relax
    \gm@ifundefined{\mw@HeadingType␣@twoheadskip}{%
      \ifdim\skip\z@>\skip\tw@
      \vskip-\skip\z@% we strip off the post-skip of previous header if it's bigger
          than current pre-skip
      \else
      \vskip-\skip\tw@% we strip off the current pre-skip otherwise
      \fi}{% But if the two-header-skip is defined, we put it
      \penalty10000
      \vskip-\skip\z@
      \penalty10000
      \vskip-\skip\tw@
      \penalty10000
      \vskip\csname\mw@HeadingType␣@twoheadskip\endcsname
      \relax}%
    \penalty10000
    \hrule␣height\z@\relax% to hide the last (un)skip before
        subsequent \addvspaces.
    \penalty10000
    \fi
    \fi
  }% of \gm@ifundefined{gmu@prevsec} 'else'.
```

```
}% of \def\gmu@checkaftersec.
\ParanoidPostsec \def\ParanoidPostsec{% this version of \ifgmu@postsec is intended for the special case of sections may contain no normal text, as while gmdocing.
\ifgmu@postsec   \def\ifgmu@postsec{% note this macro expands to an open \if.
    \skip\z@=\csname\gmu@prevsec␣@postskip\endcsname\relax
    \ifdim\lastskip=\skip\z@\relax% we play with the vskips only if the last skip is the previous heading's postskip (a counter-example I met while gmdocing).
  }}
\let\ifgmu@postsec\iftrue
\gmu@getaddvs \def\gmu@getaddvs#1\addvspace#2\gmu@getaddvs{%
  \toks\z@={#1}%
  \toks\tw@={#2}}
```

And the modification of the inner macros at last:

```
\gmu@setheading \def\gmu@setheading#1{%
  \@xa\gmu@getaddvs#1\gmu@getaddvs
  \edef#1{%
    \the\toks\z@\@nx\gmu@checkaftersec
    \@nx\addvspace\the\toks\tw@}}
\gmu@setheading\mw@normalheading
\gmu@setheading\mw@runinheading
\SetTwoheadSkip \def\SetTwoheadSkip#1#2{\@namedef{#1@twoheadskip}{#2}}
}% of \@ifnotmw's else.
```

My heading setup for mwcls

The setup of heading skips was tested in 'real' typesetting, for money that is. The skips are designed for 11/13 pt leading and together with my version of mw11.clo option file for mwcls make the headings (except paragraph and subparagraph) consist of an integer number of lines. The name of the declaration comes from my employer, "Wiedza Powszechna" Editions.

```
\@ifnotmw{}{% We define this declaration only when in mwcls.
\WPheadings \def\WPheadings{%
  \SetSectionFormatting[breakbefore,wholewidth]
      {part}{\z@\@plus1fill}{}{\z@\@plus3fill}%
  \gm@ifundefined{chapter}{}{%
    \SetSectionFormatting[breakbefore,wholewidth]
      {chapter}
      {66\p@}% {67\p@} for Adventor/Schola 0,95.
      {\FormatHangHeading{\LARGE}}
      {27\p@\@pluso,2\p@\@minus1\p@}%
  }%
  \SetTwoheadSkip{section}{27\p@\@pluso,5\p@}%
  \SetSectionFormatting{section}
      {24\p@\@pluso,5\p@\@minus5\p@}%
      {\FormatHangHeading␣{\Large}}
      {10\p@\@pluso,5\p@}% ed. Krajewska of "Wiedza Powszechna", as we understand her, wants the skip between a heading and text to be rigid.
  \SetTwoheadSkip{subsection}{11\p@\@pluso,5\p@\@minus1\p@}%
```

```
  \SetSectionFormatting{subsection}
      {19\p@\@plus0,4\p@\@minus6\p@}
      {\FormatHangHeading␣{\large}}% 12/14 pt
      {6\p@\@plus0,3\p@}% after-skip 6 pt due to p.12, not to squeeze the before-
          skip too much.
  \SetTwoheadSkip{subsubsection}{10\p@\@plus1,75\p@\@minus1\p@}%
  \SetSectionFormatting{subsubsection}
      {10\p@\@plus0,2\p@\@minus1\p@}
      {\FormatHangHeading␣{\normalsize}}
      {3\p@\@plus0,1\p@}% those little skips should be smaller than you calcu-
          late out of a geometric progression, because the interline skip enlarges
          them.
  \SetSectionFormatting[runin]{paragraph}
      {7\p@\@plus0,15\p@\@minus1\p@}
      {\FormatRunInHeading{\normalsize}}
      {2\p@}%
  \SetSectionFormatting[runin]{subparagraph}
      {4\p@\@plus1\p@\@minus0,5\p@}
      {\FormatRunInHeading{\normalsize}}
      {\z@}%
}% of \WPheadings
}% of \@ifnotmw
```

Compatibilising standard and mwcls sectionings

If you use Marcin Woliński's document classes (mwcls), you might have met their little queerness: the sectioning commands take two optional arguments instead of standard one. It's reasonable since one may wish one text to be put into the running head, another to the toc and yet else to the page. But the order of optionalities causes an incompatibility with the standard classes: MW section's first optional argument goes to the running head not to toc and if you've got a source file written with the standard classes in mind and use the first (and only) optional argument, the effect with mwcls would be different if not error.

Therefore I counter-assign the commands and arguments to reverse the order of optional arguments for sectioning commands when mwcls are in use and reverse, to make mwcls-like sectioning optionals usable in the standard classes.

With the following in force, you may both in the standard classes and in mwcls give a sectioning command one or two optional arguments (and mandatory the last, of course). If you give just one optional, it goes to the running head and to toc as in scls (which is unlike in mwcls). If you give two optionals, the first goes to the running head and the other to toc (like in mwcls and unlike in scls).

(In both cases the mandatory last argument goes only to the page.)

What more is unlike in scls, it's that even with them the starred versions of sectioning commands allow optionals (but they still send them to the Gobbled Tokens' Paradise).

(In mwcls, the only difference between starred and non-starred sec commands is (not) numbering the titles, both versions make a contents line and a mark and that's not changed with my redefinitions.)

```
\@ifnotmw{% we are not in mwcls and want to handle mwcls-like sectionings i.e.,
      those written with two optionals.
\gm@secini  \def\gm@secini{gm@la}%
 \gm@secxx  \def\gm@secxx#1#2[#3]#4{%
              \ifx\gm@secstar\@empty
```

```
2193          \n@melet{gm@true@#1mark}{#1mark}% a little trick to allow a special ver-
                  sion of the heading just to the running head.
2195          \@namedef{#1mark}##1{% we redefine \⟨sec⟩mark to gobble its argument
                  and to launch the stored true marking command on the appropriate
                  argument.
2198            \csname␣gm@true@#1mark\endcsname{#2}%
2199            \n@melet{#1mark}{gm@true@#1mark}% after we've done what we
                    wanted we restore original \#1mark.
2201          }%
\gm@secstar 2202          \def\gm@secstar{[#3]}% if \gm@secstar is empty, which means the sec-
                  tioning command was written starless, we pass the 'true' sectioning
                  command #3 as the optional argument. Otherwise the sectioning com-
                  mand was written with star so the 'true' s.c. takes no optional.
2207        \fi
2208        \@xa\@xa\csname\gm@secini#1\endcsname
2209        \gm@secstar{#4}}%
2211    }{% we are in mwcls and want to reverse MW's optionals order i.e., if there's just one
            optional, it should go both to toc and to running head.
\gm@secini 2214      \def\gm@secini{gm@mw}%
2216      \let\gm@secmarkh\@gobble% in mwcls there's no need to make tricks for special
              version to running headings.
\gm@secxx 2219      \def\gm@secxx#1#2[#3]#4{%
2220        \@xa\@xa\csname\gm@secini#1\endcsname
2221        \gm@secstar[#2][#3]{#4}}%
2222    }
  \gm@sec 2224    \def\gm@sec#1{\@dblarg{\gm@secx{#1}}}
 \gm@secx 2225    \def\gm@secx#1[#2]{%
2226      \@ifnextchar[{\gm@secxx{#1}{#2}}{\gm@secxx{#1}{#2}[#2]}}% if there's
              only one optional, we double it not the mandatory argument.
\gm@straightensec 2230    \def\gm@straightensec#1{% the parameter is for the command's name.
2231      \gm@ifundefined{#1}{}{% we don't change the ontological status of the com-
              mand because someone may test it.
2233        \n@melet{\gm@secini#1}{#1}%
2234        \@namedef{#1}{%
\gm@secstar 2235          \@ifstar{\def\gm@secstar{*}\gm@sec{#1}}{%
\gm@secstar 2236            \def\gm@secstar{}\gm@sec{#1}}}%
2237    }%
2239    \let\do\gm@straightensec
2240    \do{part}\do{chapter}\do{section}\do{subsection}\do{%
          subsubsection}
2241    \@ifnotmw{}{\do{paragraph}}% this 'straightening' of \paragraph with the stan-
          dard article caused the 'TEX capacity exceeded' error. Anyway, who on Earth
          wants paragraph titles in toc or running head?
```

enumerate* and itemize*

We wish the starred version of enumerate to be just numbered paragraphs. But hyperref redefines \item so we should do it a smart way, to set the LaTeX's list parameters that is.

(Marcin Woliński in mwcls defines those environments slightly different: his item labels are indented, mine are not; his subsequent paragraphs of an item are not indented, mine are.)

enumerate*
```
\@namedef{enumerate*}{%
  \ifnum\@enumdepth>\thr@@
    \@toodeep
  \else
    \advance\@enumdepth\@ne
    \edef\@enumctr{enum\romannumeral\the\@enumdepth}%
    \@xa\list\csname␣label\@enumctr\endcsname{%
      \partopsep\topsep␣\topsep\z@␣\leftmargin\z@
      \itemindent\@parindent␣%%\advance\itemindent\labelsep
      \labelwidth\@parindent
      \advance\labelwidth-\labelsep
      \listparindent\@parindent
      \usecounter␣\@enumctr
      \def\makelabel##1{##1\hfil}}%
  \fi}
\@namedef{endenumerate*}{\endlist}
```

itemize*
```
\@namedef{itemize*}{%
  \ifnum\@itemdepth>\thr@@
    \@toodeep
  \else
    \advance\@itemdepth\@ne
    \edef\@itemitem{labelitem\romannumeral\the\@itemdepth}%
    \@xa\list\csname\@itemitem\endcsname{%
      \partopsep\topsep␣\topsep\z@␣\leftmargin\z@
      \itemindent\@parindent
      \labelwidth\@parindent
      \advance\labelwidth-\labelsep
      \listparindent\@parindent
      \def\makelabel##1{##1\hfil␣}}%
  \fi}
\@namedef{enditemize*}{\endlist}
```

The logos

We'll modify The LaTeX logo now to make it fit better to various fonts.

```
\let\oldLaTeX\LaTeX
\let\oldLaTeXe\LaTeXe
\def\TeX{T\kern-.1667em\lower.5ex\hbox{E}\kern-.125emX\@}
```

\DeclareLogo
```
\newcommand*\DeclareLogo[3][\relax]{%
    % [#1] is for non-LaTeX spelling and will be used in the PD1 encoding (to make
      pdf bookmarks);
    % #2 is the command, its name will be the PD1 spelling by default,
    % #3 is the definition for all the font encodings except PD1.
```

\gmu@reserveda
```
  \ifx\relax#1\def\gmu@reserveda{\@xa\@gobble\string#2}%
  \else
```

\gmu@reserveda
```
    \def\gmu@reserveda{#1}%
  \fi
```

```
    \edef\gmu@reserveda{%
      \@nx\DeclareTextCommand\@nx#2{PD1}{\gmu@reserveda}}
    \gmu@reserveda
    \DeclareTextCommandDefault#2{#3}%
\pdef   \pdef#2{#3}% added for XeTeX.
  }
\DeclareLogo  \DeclareLogo\LaTeX{%
    {%
      L%
      \setbox\z@\hbox{\check@mathfonts
        \fontsize\sf@size\z@
        \math@fontsfalse\selectfont
        A}%
      \kern-.57\wd\z@
      \sbox\tw@ T%
      \vbox to\ht\tw@{\copy\z@ \vss}%
      \kern-.2\wd\z@}% originally −, 15 em for T.
    {%
      \ifdim\fontdimen1\font=\z@
      \else
        \count\z@=\fontdimen5\font
        \multiply\count\z@ by 64\relax
        \divide\count\z@ by\p@
        \count\tw@=\fontdimen1\font
        \multiply\count\tw@ by\count\z@
        \divide\count\tw@ by 64\relax
        \divide\count\tw@ by\tw@
        \kern-\the\count\tw@ sp\relax
      \fi}%
    \TeX}
\LaTeXe  \DeclareLogo\LaTeXe{\mbox{\m@th \if
       b\expandafter\@car\f@series\@nil\boldmath\fi
       \LaTeX\kern.15em2$_{\textstyle\varepsilon}$}}

  \StoreMacro\LaTeX
  \StoreMacro*{LaTeX }
```

'(LA)TEX' in my opinion better describes what I work with/in than just 'LATEX'.

```
\LaTeXpar  \DeclareLogo[(La)TeX]{\LaTeXpar}{%
    {%
      \setbox\z@\hbox{(}%)
      \copy\z@
      \kern-.2\wd\z@ L%
      \setbox\z@\hbox{\check@mathfonts
        \fontsize\sf@size\z@
        \math@fontsfalse\selectfont
        A}%
      \kern-.57\wd\z@
      \sbox\tw@ T%
      \vbox to\ht\tw@{\box\z@%
        \vss}%
    }%
    \kern-.07em% originally −, 15 em for T.
```

```
  {%(
    \sbox\z@)%
    \kern-.2\wd\z@\copy\z@
    \kern-.2\wd\z@}\TeX
}
```

"Here are a few definitions which can usefully be employed when documenting package files: now we can readily refer to $\mathcal{AMS}$-TEX, BIBTEX and SLITEX, as well as the usual TEX and LATEX. There's even a PLAIN TEX and a WEB."

```
\gm@ifundefined{AmSTeX}
\AmSTeX  {\def\AmSTeX{\leavevmode\hbox{$\mathcal A\kern-.2em%
           \lower.376ex%
            \hbox{$\mathcal M$}\kern-.2em\mathcal S$-\TeX}}}{}
\BibTeX  \DeclareLogo\BibTeX{{\rmfamily B\kern-.05em%
           \textsc{i{\kern-.025em}b}\kern-.08em% the kern is wrapped in braces
                for my \fakescaps' sake.
           \TeX}}
\SliTeX  \DeclareLogo\SliTeX{{\rmfamily S\kern-.06emL\kern-.18em%
            \raise.32ex\hbox
              {\scshape i}\kern-.03em\TeX}}
\PlainTeX \DeclareLogo\PlainTeX{\textsc{Plain}\kern2pt\TeX}
   \Web  \DeclareLogo\Web{\textsc{Web}}
```

There's also the (LA)TEX logo got with the \LaTeXpar macro provided by gmutils. And here *The TEXbook*'s logo:

```
\TeXbook \DeclareLogo[The TeX book]\TeXbook{\textsl{The \TeX book}}
         \let\TB\TeXbook% TUG Boat uses this.
   \eTeX \DeclareLogo[e-TeX]\eTeX{%
           \iffontchar\font"03B5{\itshape }\else
           \ensuremath{\varepsilon}\fi-\kern-.125em\TeX}% definition sent by Karl
                Berry from TUG Boat itself.

         \StoreMacro\eTeX
\pdfeTeX \DeclareLogo[pdfe-TeX]\pdfeTeX{pdf\eTeX}
 \pdfTeX \DeclareLogo\pdfTeX{pdf\TeX}
\pdfLaTeX \DeclareLogo\pdfLaTeX{pdf\LaTeX}

         \gm@ifundefined{XeTeX}{%
  \XeTeX   \DeclareLogo\XeTeX{X\kern-.125em\relax
             \gm@ifundefined{reflectbox}{%
               \lower.5ex\hbox{E}\kern-.1667em\relax}{%
               \lower.5ex\hbox{\reflectbox{E}}\kern-.1667em\relax}%
             \TeX}}{}
         \gm@ifundefined{XeLaTeX}{%
\XeLaTeX   \DeclareLogo\XeLaTeX{X\kern-.125em\relax
             \gm@ifundefined{reflectbox}{%
               \lower.5ex\hbox{E}\kern-.1667em\relax}{%
               \lower.5ex\hbox{\reflectbox{E}}\kern-.1667em\relax}%
             \LaTeX}}
```

As you see, if TEX doesn't recognize \reflectbox (graphics isn't loaded), the first E will not be reversed. This version of the command is intended for non-XETEX usage. With

XeTeX, you can load the xltxtra package (e.g. with the gmutils `\XeTeXthree` declaration) and then the reversed E you get as the Unicode Latin Letter Reversed E.

\LuaTeX 2440 `\DeclareLogo[LuaTeX]\LuaTeX{\textsc{Lua}\TeX}`

Expandable turning stuff all into 'other'

While typesetting a unicode file contents with inputenc package I got a trouble with some Unicode sequences that expanded to unexpandable cses: they could'nt be used within `\csname...\endcsname`. My TeXGuru advised to use `\meanig` to make all the name 'other'. So—here we are.

Don't use them in `\edefs`, they would expand not quite.

The next macro is intended to be put in `\edefs` with a macro argument. The meaning of the macro will be made all 'other' and the words '(long) macro:->' gobbled.

\all@other 2459 `\long\def\all@other#1{\@xa\gm@gobmacro\meaning#1}`

The `\gm@gobmacro` macro above is applied to gobble the `\meaning`'s beginnig, `long␣macro:->` all 'other' that is. Use of it:

```
2464 \edef\gmu@tempa{%
\gm@gobmacro 2465   \def\@nx\gm@gobmacro##1\@xa\@gobble\string\macro:##2->{}}
2466 \gmu@tempa
```

Brave New World of XeTeX

```
\@ifXeTeX 2483 \newcommand\@ifXeTeX[2]{%
2484   \ifdefined\XeTeXversion
2485   \unless\ifx\XeTeXversion\relax\afterfifi{#1}\else\afterfifi{%
           #2}\fi
2486   \else\afterfi{#2}\fi}
\XeTeXthree 2489 \DeclareDocumentCommand\XeTeXthree{o}{%
2493   \@ifXeTeX{%
2494     \IfValueT{#1}{\PassOptionsToPackage{#1}{fontspec}}%
2495     \@ifpackageloaded{gmverb}{\StoreMacro\verb}{}%
2496     \RequirePackage{xltxtra}% since v 0.4 (2008/07/29) this package redefines \verb and verbatim*, and quite elegantly provides an option to suppress the redefinitions, but unfortunately that option excludes also a nice definition of \xxt@visiblespace which I fancy.
2503     \@ifpackageloaded{gmverb}{\RestoreMacro\verb}{}%
2504     \AtBeginDocument{%
2505       \RestoreMacro\LaTeX\RestoreMacro*{LaTeX␣}% my version of the LaTeX logo has been stored just after defining, in line 2354.
2508     \RestoreMacro\eTeX}%
2509   }{}}
```

The `\udigits` declaration causes the digits to be typeset uppercase. I provide it since by default I prefer the lowercase (nautical) digits.

```
2514 \AtBeginDocument{%
2515   \@ifpackageloaded{fontspec}{%
\udigits 2516     \pdef\udigits{%
2517       \addfontfeature{Numbers=Uppercase}}%
2518   }{%
2519     \emptify\udigits}}
```

Fractions

\Xedekfracc
```
\def\Xedekfracc{\@ifstar\gmu@xedekfraccstar\gmu@xedekfraccplain}
```

(plain) The starless version turns the font feature `frac` on.

(*) But nor my modification of Minion Pro neither TEX Gyre Pagella doesn't feature the `frac` font feature properly so, with the starred version of the declaration we use the characters from the font where available (see the `\@namedefs` below) and the `numr` and `dnom` features with the fractional slash otherwise (via `\gmu@dekfracc`).

(**) But Latin Modern Sans Serif Quotation doesn't support the numerator and denominator positions so we provide the double star version for it, which takes the char from font if it exist and typesets with lowers and kerns otherwise.

\gmu@xedekfraccstar \gmu@xefraccdef
```
\def\gmu@xedekfraccstar{%
  \def\gmu@xefraccdef##1##2{%
      \iffontchar\font␣##2
        \@namedef{gmu@xefracc##1}{\char##2␣}%
      \else
        \n@melet{gmu@xefracc##1}{relax}%
      \fi}%
```

\gmu@dekfracc
```
    \def\gmu@dekfracc##1/##2{%
      {\addfontfeature{VerticalPosition=Numerator}##1}%
           \gmu@numeratorkern
      \char"2044␣\gmu@denominatorkern
      {\addfontfeature{VerticalPosition=Denominator}##2}}%
```

We define the fractional macros. Since Adobe Minion Pro doesn't contain $\frac{n}{5}$ nor $\frac{n}{6}$, we don't provide them here.

```
    \gmu@xefraccdef{1/4}{"BC}%
    \gmu@xefraccdef{1/2}{"BD}%
    \gmu@xefraccdef{3/4}{"BE}%
    \gmu@xefraccdef{1/3}{"2153}%
    \gmu@xefraccdef{2/3}{"2154}%
    \gmu@xefraccdef{1/8}{"215B}%
    \gmu@xefraccdef{3/8}{"215C}%
    \gmu@xefraccdef{5/8}{"215D}%
    \gmu@xefraccdef{7/8}{"215E}%
```

\dekfracc@args \gm@duppa
```
    \pdef\dekfracc@args##1/##2{%
      \def\gm@duppa{##1/##2}%
      \gm@ifundefined{gmu@xefracc\all@other\gm@duppa}{%
        \gmu@dekfracc{##1}/{##2}}{%
        \csname␣gmu@xefracc\all@other\gm@duppa\endcsname}%
      \if@gmu@mmhbox\egroup\fi
    }% of \dekfracc@args.
    \@ifstar{\let\gmu@dekfracc\gmu@dekfraccsimple}{}%
  }
```

\gmu@xedekfraccplain \dekfracc@args
```
\def\gmu@xedekfraccplain{% 'else' of the main \@ifstar
    \pdef\dekfracc@args##1/##2{%
      \ifmmode\hbox\fi{%
        \addfontfeature{Fractions=On}%
        ##1/##2}%
      \if@gmu@mmhbox\egroup\fi
    }% of \dekfracc@args
  }
```

\if@gmu@mmhbox
```
\newif\if@gmu@mmhbox% we'll use this switch for \dekfracc and also for \thous
```
(hacky thousand separator).

\dekfracc
```
\pdef\dekfracc{%
  \ifmmode\hbox\bgroup\@gmu@mmhboxtrue\fi
  \dekfracc@args}
```

\gmu@numeratorkern
```
\def\gmu@numeratorkern{\kern-.05em\relax}
\let\gmu@denominatorkern\gmu@numeratorkern
```

What have we just done? We defined two versions of the `\Xefractions` declaration. The starred version is intended to make use only of the built-in fractions such as ½ or ⅞. To achieve that, a handful of macros is defined that expand to the Unicodes of built-in fractions and `\dekfracc` command is defined to use them.

The unstarred version makes use of the Fraction font feature and therefore is much simpler.

Note that in the first argument of `\@ifstar` we wrote 8 (eight) #s to get the correct definition and in the second argument 'only' 4. (The LaTeX 2_ε Source claims that that is changed in the 'new implementation' of `\@ifstar` so maybe it's subject to change.)

A simpler version of `\dekfracc` is provided in line 3439.

`\resizegraphics`

\resizegraphics
```
\def\resizegraphics#1#2#3{%
  \resizebox{#1}{#2}{%
    \includegraphics{#3}}}
```

\GMtextsuperscript
```
\def\GMtextsuperscript{%
  \@ifXeTeX{%
```
\textsuperscript
```
    \def\textsuperscript##1{{%
        \addfontfeature{VerticalPosition=Numerator}##1}}%
  }{\truetextsuperscript}}
```

\truetextsuperscript
```
\def\truetextsuperscript{%
```
\textsuperscript
```
  \pdef\textsuperscript##1{%
    \@textsuperscript{\selectfont##1}}%
```
\@textsuperscript
```
  \def\@textsuperscript##1{%
    {\m@th\ensuremath{^{\mbox{\fontsize\sf@size\z@##1}}}}}}
```

Settings for mathematics in main font

\gmath
\garamath

I used these terrible macros while typesetting E. Szarzyński's *Letters* in 2008. The `\gmath` declaration introduces math-active digits and binary operators and redefines greek letters and parentheses, the `\garamath` declaration redefines the quantifiers and is more Garamond Premier Pro-specific.

\gmu@getfontstring
```
\def\gmu@getfontstring{%
  \xdef\gmu@fontstring{%
    \gmu@fontstring@}}
```

\gmu@fontstring@
```
\def\gmu@fontstring@{%
  \@xa\@xa\@xa\gmu@quotedstring\@xa\meaning\the\font\@@nil}
```

\gmu@quotedstring
```
\def\gmu@quotedstring#1"#2"#3\@@nil{"#2"}
```

\gmu@getfontscale
```
\def\gmu@getfontscale#1Scale#2=#3,{%
  \ifx\gmu@getfontscale#3\else
  \gdef\gmu@fontscale{[#3]␣}%
  \afterfi\gmu@getfontscale\fi
```

```
}
\def\gmu@getfontdata#1{%
  \global\emptify\gmu@fontscale
  \begingroup
  #1%
  \@xa\@xa\@xa\gmu@getfontscale
  \csname␣zf@family@options\f@family\endcsname
  ,Scale=\gmu@getfontscale,%
  \gmu@getfontstring
  \xdef\gmu@theskewchar{\the\skewchar\font}%
  \endgroup}
\def\gmu@stripchar#1"{"}
\def\gmath@getfamnum{%
  \edef\gmath@famnum{\@xa\gmu@stripchar\meaning\gmath@fam}%
}
```

\XeTeXmathcode⟨*char slot*⟩ [⟨=⟩] ⟨*type*⟩ ⟨*family*⟩ ⟨*char slot*⟩

```
\pdef\gmathbase{%
  \gmu@getfontdata{\rmfamily\itshape}%
  \edef\gmu@tempa{%
    \@nx\DeclareSymbolFont{letters}{\encodingdefault}{gmathit}{%
        m}{it}%
    \@nx\DeclareFontFamily{\encodingdefault}{gmathit}{%
      \skewchar\font\gmu@theskewchar\space}%
    \@nx\DeclareFontShape{\encodingdefault}{gmathit}{m}{it}{%
      <->␣\gmu@fontscale␣\gmu@fontstring}{}%
  }\gmu@tempa\typeout{@@@␣gmathit␣(letters):␣\meaning\gmu@tempa}%
  \gmu@getfontdata{\rmfamily\upshape}%
  \edef\gmu@tempa{%
    \@nx\DeclareSymbolFont{gmathroman}{\encodingdefault}{%
        gmathrm}{m}{n}%
    \@nx\DeclareFontFamily{\encodingdefault}{gmathrm}{%
      \skewchar\font\gmu@theskewchar\space}%
    \@nx\DeclareFontShape{\encodingdefault}{gmathrm}{m}{n}{%
      <->␣\gmu@fontscale␣\gmu@fontstring}{}%
  }\gmu@tempa\typeout{@@@␣gmathrm␣(upright␣symbols):
    \meaning\gmu@tempa}%
  \font\gmath@font=\gmu@fontstring\relax
  \DeclareDocumentCommand\gmath@do{mom}{%
       %  #1   the character or cs to be declared,
       % [#2]  the Unicode to be assigned,
       %  #3   math type (cs like \mathord etc.)
    \gmath@getfamnum
    \IfValueTF{##2}{%
      \edef\gmu@tempa{%
        =␣\mathchar@type##3\space
        \gmath@famnum\space
        "##2\relax}%
      \if\relax\@nx##1%
        \edef\gmu@tempa{%
          \XeTeXmathchardef␣\@nx##1\gmu@tempa}%
        \else
```

```
          \edef\gmu@tempa{%
            \XeTeXmathcode␣`##1␣\gmu@tempa}
          \fi%
        }%
        {%
          \edef\gmu@tempa{%
            \XeTeXmathcode␣`##1␣=
            \mathchar@type##3\space
            \gmath@famnum\space
            `##1\relax}%
        }%
        \gmu@tempa
        \typeout{@@@@␣\@nx##1}%
        \typeout{@@@@␣\meaning\gmu@tempa}%
      }% of \gmath@do
\gmath@doif
      \DeclareDocumentCommand\gmath@doif{mmmoo}{%
           %  #1  the Unicode of char enquired,
           %  #2  the char or cs to be declared,
           %  #3  math type cs(\mathord etc.),
           % [#4] second-choice Unicode (taken if first-choice is absent),
           % [#5] third-choice Unicode (as above if second-choice is absent from
                font).
        \iffontchar\gmath@font"##1␣\gmath@do##2[##1]##3%
        \else\IfValueT{##4}{%
          \iffontchar\gmath@font"##4␣\gmath@do##2[##4]##3%
          \else\IfValueT{##5}{%
            \iffontchar\gmath@font"##5␣\gmath@do##2[##5]##3%
            \fi}%
          \fi}%
        \fi}%
    \iffalse␣% doesn't work in a non-math font.
\gmath@delc
      \DeclareDocumentCommand\gmath@delc{mo}{%
           %  #1  the char or cs to be declared,
           % [#2] the Unicode (if not the same as the char).
      \gmath@getfamnum
      \IfValueTF{##2}{%
        \edef\gmu@tempa{%
          =␣\gmath@famnum\space␣"##2\relax}%
        \edef\gmu@tempa{%
          \XeTeXdelcode␣`##1␣\gmu@tempa}
      }%
      {%
        \edef\gmu@tempa{%
          \XeTeXdelcode␣`##1␣=
          \gmath@famnum\space
          `##1\relax}%
      }%
      \gmu@tempa
      \typeout{@@@@␣\@nx##1}%
      \typeout{@@@@␣\meaning\gmu@tempa}%
    }% of \gmath@delc
\gmath@delcif
    \def\gmath@delcif##1##2{%
```

```
        % #1 the Unicode enquired,
        % #2 the char to be delcode-declared
2789    \iffontchar\gmath@font"##1␣\gmath@delc##2[##1]\fi}
2790  \fi% of iffalse
```

\gmath@delimif

```
2792  \def\gmath@delimif##1##2##3{%
        % #1 the Unicode enquired,
        % #2 the cs defined as \XeTeXdelimiter,
        % #3 the math type cs (probably \mathopen or \mathclose).
2799    \iffontchar\gmath@font"##1
2800      \gmath@getfamnum
2801      \protected\edef##2{\@nx\ensuremath{%
2802          \XeTeXdelimiter␣\mathchar@type##3\space
2803          \gmath@famnum\space␣"##1\relax}}%
2804    \fi}% of \gmath@delimif.
```

\gmu@dogmathbase

```
2806  \pdef\gmu@dogmathbase{%
2808    \let\gmath@fam\symgmathroman
2810    \typeout{@@@␣gmutils.sty:␣taking␣some␣math␣chars␣from␣the␣
          font^^J␣\gmu@fontstring@}%
2811    \gmath@do+\mathbin
2812    \gmath@doif{2212}-\mathbin[2013]% minus sign if present or else en dash
2813    \gmath@do=\mathrel
2814    \gmath@doo\mathord
2815    \gmath@do1\mathord
2816    \gmath@do2\mathord
2817    \gmath@do3\mathord
2818    \gmath@do4\mathord
2819    \gmath@do5\mathord
2820    \gmath@do6\mathord
2821    \gmath@do7\mathord
2822    \gmath@do8\mathord
2823    \gmath@do9\mathord
2825    \gmath@doif{2A7D}\xleq\mathrel
2826    \gmath@doif{2A7E}\xgeq\mathrel
2827    \@ifpackageloaded{polski}{%
2828      \ifdefined\xleq
2829      \let\leq=\xleq
2830      \let\le=\leq
2831      \fi
2832      \ifdefined\xgeq
2833      \let\geq=\xgeq
2834      \let\ge=\geq
2835      \fi}{}%
2837    \gmath@do.\mathpunct
2838    \gmath@do,\mathpunct
2839    \gmath@do;\mathpunct
2840    \gmath@do…\mathpunct
2841    \gmath@do(\mathopen
2844    \gmath@do)\mathclose
2846    \gmath@do[\mathopen
2848    \gmath@do]\mathclose
2851    \gmath@doif{00D7}×\mathbin
2852    \gmath@do:\mathrel
```

```
\gmath@doif{00B7}·\mathbin
\gmath@doif{22C6}*\mathbin
\gmath@doif{2300}\varnothing\mathord
\gmath@doif{221E}\infty\mathord
\gmath@doif{2248}\approx\mathrel
\gmath@doif{2260}\neq\mathrel
\let\ne\neq
\gmath@doif{00AC}\neg\mathbin
\gmath@do/\mathop
\gmath@do<\mathrel
\gmath@do>\mathrel
\gmath@doif{2329}\langle\mathopen
\gmath@doif{232A}\rangle\mathclose
\gmath@doif{2202}\partial\mathord
\gmath@doif{00B1}\pm\mathbin
\gmath@doif{007E}\sim\mathrel
\gmath@doif{2190}\leftarrow\mathrel
\gmath@doif{2192}\rightarrow\mathrel
\gmath@doif{2194}\leftrightarrow\mathrel% if not present, \gmathfurther
      will take care of it if left and right arrows are present.
\gmath@doif{2191}\uparrow\mathrel% it should be a delimiter (declared
      with \gmath@delimif) but in a non-math font the delimiters don't work
      (2008/11/19) and I don't think I'll ever need up- and down- arrows as
      delimiters.
\gmath@doif{2193}\downarrow\mathrel
\gmath@doif{2208}\in\mathrel[03F5][0454]%
```

As a fan of modal logics I allow redefinition of `\lozenge` and `\square` iff both are in the font. I don't accept the 'ballot box' U+2610.

```
\if\iffontchar\gmath@font"25CA␣0\else␣1\fi
   \iffontchar\gmath@font"25FB␣0\else\iffontchar%
        \gmath@font"25A1␣0\else␣2\fi\fi
  \gmath@do\lozenge[25CA]\mathord
  \gmath@doif{25FB}\square\mathord[25A1]% 'medium white square (modal
       operator)' of just 'white square'.
\fi
\gmath@doif{EB08}\bigcircle\mathbin
\gmath@doif{2227}\wedge\mathbin
\gmath@doif{2228}\vee\mathbin
\gmath@doif{0393}\Gamma\mathalpha
\gmath@doif{0394}\Delta\mathalpha
\gmath@doif{0398}\Theta\mathalpha
\gmath@doif{039B}\Lambda\mathalpha
\gmath@doif{039E}\Xi\mathalpha
\gmath@doif{03A3}\Sigma\mathalpha
\gmath@doif{03A5}\Upsilon\mathalpha
\gmath@doif{03 6}\Phi\mathalpha
\gmath@doif{03A8}\Psi\mathalpha
\gmath@doif{03A9}\Omega\mathalpha
\let\gmath@fam\symletters
\gmath@doif{03B1}\alpha\mathalpha
\gmath@doif{03B2}\beta\mathalpha
\gmath@doif{03B3}\gamma\mathalpha
```

```
    \gmath@doif{03B4}\delta\mathalpha
    \gmath@doif{03F5}\epsilon\mathalpha
    \gmath@doif{03B5}\varepsilon\mathalpha
    \gmath@doif{03B6}\zeta\mathalpha
    \gmath@doif{03B7}\eta\mathalpha
    \gmath@doif{03B8}\theta\mathalpha
    \gmath@doif{03D1}\vartheta\mathalpha
    \gmath@doif{03B9}\iota\mathalpha
    \gmath@doif{03BA}\kappa\mathalpha
    \gmath@doif{03BB}\lambda\mathalpha
    \gmath@doif{03BC}\mu\mathalpha
    \gmath@doif{03BD}\nu\mathalpha
    \gmath@doif{03BE}\xi\mathalpha
    \gmath@doif{03C0}\pi\mathalpha
    \gmath@doif{03A0}\Pi\mathalpha
    \gmath@doif{03C1}\rho\mathalpha
    \gmath@doif{03C3}\sigma\mathalpha
    \gmath@doif{03DA}\varsigma\mathalpha% 03C2?
    \gmath@doif{03C4}\tau\mathalpha
    \gmath@doif{03C5}\upsilon\mathalpha
    \gmath@doif{03D5}\phi\mathalpha
    \gmath@doif{03C8}\psi\mathalpha
    \gmath@doif{03C9}\omega\mathalpha
    \if␣1␣1%
    \iffontchar\gmath@font"221A
      \fontdimen61\gmath@font=1pt
      \edef\sqrtsign{%
        \XeTeXradical␣\@xa\gmu@stripchar\meaning\symgmathroman%
             \space␣"221A\relax}%
    \fi
    \fi% of if 1 1.
  }%
  \AtBeginDocument{\gmu@dogmathbase\let\gmathbase%
       \gmu@dogmathbase}%
  \not@onlypreamble\gmathbase
}% of \gmathbase
\@onlypreamble\gmathbase
```

It's a bit tricky: if `\gmathbase` occurs first time in a document inside `document` then an error error is raised. But if `\gmathbase` occurs first time in the preamble, then it removes itself from the only-preamble list and redefines itself to be only the inner macro of the former itself.

\gmathfurther

```
\pdef\gmathfurther{%
  \def\do##1##2##3{\def##1{%
      \mathop{\mathchoice{\hbox{%
            \rm
            \edef\gma@tempa{\the\fontdimen8\font}%
            \larger[3]%
            \lower\dimexpr(\fontdimen8\font-\gma@tempa)/2␣%
              \hbox{##2}}}{\hbox{%
              \rm
              \edef\gma@tempa{\the\fontdimen8\font}%
              \larger[2]%
```

```
            \lower\dimexpr(\fontdimen8\font-\gma@tempa)/2␣%
            \hbox{##2}}}%
          {\mathrm{##2}}{\mathrm{##2}}}##3}}%
  \iffontchar\gmath@font"2211␣␣␣␣\do\sum{\char"2211}{}\fi%
  \do\forall{\gma@quantifierhook␣\rotatebox[origin=c]{180}{A}%
    \gmu@forallkerning
  }{\nolimits}%
  \def\gmu@forallkerning{\setboxo=\hbox{A}\setbox2=\hbox{%
      \scriptsize␣x}%
    \kern\dimexpr\ht2/3*2␣-\wdo/2\relax}% to be able to redefine it when
        the big quantifier is Bauhaus-like.
  \do\exists{\rotatebox[origin=c]{180}{\gma@quantifierhook␣E}}%
      \nolimits%
  \def\do##1##2##3{\def##1{##3{%
      \mathchoice{\hbox{\rm##2}}{\hbox{\rm##2}}%
      {\hbox{\rm\scriptsize##2}}{\hbox{\rm\tiny##2}}}}}%
  \unless\iffontchar\gmath@font"2227
    \do\vee{\rotatebox[origin=c]{90}{<}}\mathbin%
  \fi
  \unless\iffontchar\gmath@font"2228
    \do\wedge{\rotatebox[origin=c]{-90}{<}}\mathbin
  \fi
  \unless\iffontchar\gmath@font"2194
    \if\iffontchar\gmath@font"2190␣o\else1\fi
      \iffontchar\gmath@font"2192␣o\else2\fi
      \do\leftrightarrow{\char"2190\kern-0,1em␣\char"2192}%
          \mathrel
  \fi\fi
  \def\do##1##2##3{\def##1####1{##2{\hbox{%
          \rm
          \setboxo=\hbox{####1}%
          \edef\gma@tempa{\the\hto}%
          \edef\gma@tempb{\the\dpo}%
          ##3%
          \setboxo=\hbox{####1}%
          \lower\dimexpr(\hto␣+␣\dpo)/2-\dpo␣-((\gma@tempa+%
              \gma@tempb)/2-\gma@tempb)␣%
          \boxo}}}}%
\do\bigl\mathopen\larger
\do\bigr\mathclose\larger
\do\Bigl\mathopen\largerr
\do\Bigr\mathclose\largerr
\do\biggl\mathopen{\larger[3]}%
\do\biggr\mathclose{\larger[3]}%
\do\Biggl\mathopen{\larger[4]}%
\do\Biggr\mathclose{\larger[4]}%
\addtotoks\everymath{%
  \def\do##1##2{\def##1{\ifmmode##2{\mathchoice
        {\hbox{\rm\char`##1}}{\hbox{\rm\char`##1}}%
        {\hbox{\rm\scriptsize\char`##1}}{\hbox{\rm\tiny%
            \char`##1}}}%
      \else\char`##1\fi}}%
  \do\{\mathopen
```

```
      \do\}\mathclose
      \def\={\mathbin{=}}%
      \def\neqb{\mathbin{\neq}}%
      \let\neb\neqb
      \def\do##1{\edef\gma@tempa{%
          \def\@xa\@nx\csname␣\@xa\gobble\string##1r\endcsname{%
            \@nx\mathrel{\@nx##1}}}%
        \gma@tempa}%
      \do\vee␣\do\wedge␣\do\neg
      \def\fakern{\mkern-3mu}%
      \thickmuskip=8mu␣plus␣4mu\relax
      \gma@gmathhook
    }% of \everymath.
    \everydisplay\everymath
    \ifdefined\Url
      \ampulexdef\Url{\let\do}\@makeother
      {\everymath{}\let\do\@makeother}% I don't know why but the url package's
          % \url typesets the argument inside a math which caused digits not to
          be typewriter but Roman and lowercase.
  \fi% of ifdefined Url.
}% of \def\gmathfurther.
\def\gmath{\gmathbase\gmathfurther}
\pdef\gmathscripts{%
  \addtotoks\everymath{\catcode`\^=7\relax␣\catcode`\_=8\relax␣}%
  \everydisplay\everymath}
\pdef\gmathcats{%
  \addtotoks\everymath{\gmu@septify}%
  \everydisplay\everymath}

\emptify\gma@quantifierhook
\def\quantifierhook#1{%
  \def\gma@quantifierhook{#1}}

\emptify\gma@gmathhook
\def\gmathhook#1{\addtomacro\gma@gmathhook{#1}}

\def\gma@dollar$#1${{\gmath$#1$}}%
\def\gma@bare#1{\gma@dollar$#1$}%
\def\gma@checkbracket{\@ifnextchar\[%
  \gma@bracket\gma@bare}
\def\gma@bracket\[#1\]{{\gmath\[#1\]}\@ifnextchar\par{}{%
      \noindent}}
\def\gma{\@ifnextchar$%
  \gma@dollar\gma@checkbracket}

\def\garamath{%
  \addtotoks\everymath{%
    \quantifierhook{\addfontfeature{OpticalSize=800}}%
    \def\gma@arrowdash{{%
        \setboxo=\hbox{\char"2192}\copyo\kern-o,6\wdo
        \bgcolor\rule[-\dpo]{o,6\wdo}{\dimexpr\hto+\dpo}%
            \kern-o,6\wdo}}%
    \def\gma@gmathhook{%
      \def\do####1####2####3{\def####1{####3{%
```

```
\mathchoice 3095              \mathchoice{\hbox{\rm####2}}{\hbox{\rm####2}}%
            3096              {\hbox{\rm\scriptsize####2}}{\hbox{\rm%
                                   \tiny####2}}}}%
            3097        \do\mapsto{\rule[0,4ex]{0,1ex}{0,4ex}\kern-0,05em%
            3098          \gma@arrowdash\kern-0,05em\char"2192}\mathrel
            3099        \do\cup{\scshape␣u}\mathbin
            3100        \do\varnothing{\setbox0=\hbox{\gma@quantifierhook%
                              \addfontfeature{Scale=1.272727}0}%
            3101          \setbox2=\hbox{\char"2044}%
            3102          \copy0␣\kern-0,5\wd0␣\kern-0,5\wd2␣\lowero,125\wd0␣\copy2
            3103          \kern0,5\wd0\kern-0,5\wd2}{}%
            3104        \do\leftarrow{\char"2190\kern-0,05em\gma@arrowdash}\mathrel
            3105        \do\rightarrow{\gma@arrowdash\kern-0,05em\char"2192}%
                              \mathrel
            3106        \do\in{\gma@quantifierhook\char"0454}\mathbin
            3107      }}%
            3108    \everydisplay\everymath}
```

Minion and Garamond Premier kerning and ligature fixes

»Ws« shall not make long »s« because long »s« looks ugly next to »W«.

```
\gmu@tempa  3117 \def\gmu@tempa{\kern-0,08em\penalty10000\hskiposp\relax
            3118   s\penalty10000\hskiposp\relax}
            3120 \protected\edef\Vs{V\gmu@tempa}
            3122 \protected\edef\Ws{W\gmu@tempa}
        \Wz 3124 \pdef\Wz{W\kern-0,05em\penalty10000\hskiposp\relax␣z}
```

Varia

A very neat macro provided by doc. I copy it ~verbatim.

```
\gmu@tilde  3133 \def\gmu@tilde{%
            3134   \leavevmode\lower.8ex\hbox{$\,\widetilde{\mbox{␣}}\,$}}
```

Originally there was just \␣ instead of \mbox{␣} but some commands of ours do redefine \␣.

```
        \*  3138 \pdef\*{\gmu@tilde}
            3144 \AtBeginDocument{% to bypass redefinition of \~ as a text command with various
                                    encodings
\texttilde  3146   \pdef\texttilde{%
            3149     \@ifnextchar/{\gmu@tilde\kern-0,1667em\relax}\gmu@tilde}}
```

We prepare the proper kerning for "~/".

The standard \obeyspaces declaration just changes the space's \catcode to 13 ('active'). Usually it is fairly enough because no one 'normal' redefines the active space. But we are *not* normal and we do *not* do usual things and therefore we want a declaration that not only will \activeate the space but also will (re)define it as the \␣ primitive. So define \gmobeyspaces that obeys this requirement.

(This definition is repeated in gmverb.)

```
            3161 \foone{\catcode`\␣\active}%
\gmobeyspaces 3162 {\def\gmobeyspaces{\let␣\␣\catcode`\␣\active}}
```

While typesetting poetry, I was surprised that sth. didn't work. The reason was that original `\obeylines` does `\let` not `\def`, so I give the latter possibility.

```
\foone{\catcode`\^^M\active}% the comment signs here are crucial.
\defobeylines {\def\defobeylines{\catcode`\^^M=13 \def^^M{\par}}}
```

Another thing I dislike in LaTeX yet is doing special things for `\...skip`'s, 'cause I like the Knuthian simplicity. So I sort of restore Knuthian meanings:

```
\deksmallskip \def\deksmallskip{\vskip\smallskipamount}
\undeksmallskip \def\undeksmallskip{\vskip-\smallskipamount}
\dekmedskip \def\dekmedskip{\vskip\medskipamount}
\dekbigskip \def\dekbigskip{\vskip\bigskipamount}

\hfillneg \def\hfillneg{\hskip opt plus -1fill\relax}
```

In some `\if(cat?)` test I needed to look only at the first token of a tokens' string (first letter of a word usually) and to drop the rest of it. So I define a macro that expands to the first token (or {⟨*text*⟩}) of its argument.

```
\@firstofmany \long\def\@firstofmany#1#2\@@nil{#1}
\@secondofmany \long\def\@secondofmany#1#2\@@nil{#2}
```

A mark for the **TODO!**s:

```
\TODO \newcommand*{\TODO}[1][]{{%
    \sffamily\bfseries\huge TODO!\if\relax#1\relax\else\space%
        \fi#1}}
```

I like twocolumn tables of contents. First I tried to provide them by writing `\begin{%multicols}{2}` and `\end{multicols}` outto the .toc file but it worked wrong in some cases. So I redefine the internal LaTeX macro instead.

```
\twocoltoc \newcommand*\twocoltoc{%
  \RequirePackage{multicol}%
\@starttoc  \def\@starttoc##1{%
    \begin{multicols}{2}\makeatletter\@input {\jobname .##1}%
      \if@filesw \@xa \newwrite \csname tf@##1\endcsname
        \immediate \openout \csname tf@##1\endcsname \jobname
            .##1\relax
      \fi
      \@nobreakfalse\end{multicols}}}

\@onlypreamble\twocoltoc
```

The macro given below is taken from the multicol package (where its name is `\enough@room`). I put it in this package since I needed it in two totally different works.

```
\enoughpage \newcommand*\enoughpage[1]{%
  \par
  \dimeno=\pagegoal
  \advance\dimeno by-\pagetotal
  \ifdim\dimeno<#1\relax\newpage\fi}
```

An equality sign properly spaced:

```
\equals \pdef\equals{\hunskip${}={}$\ignorespaces}
```

And for the LaTeX's pseudo-code statements:

```
\eequals \pdef\eequals{\hunskip${}=={}$\ignorespaces}

\· \pdef\·{\hunskip${}·{}$\ignorespaces}
```

While typesetting a UTF-8 ls-R result I found a difficulty that follows: UTF-8 encoding is handled by the inputenc package. It's O.K. so far. The UTF-8 sequences are managed using active chars. That's O.K. so far. While writing such sequences to a file, the active chars expand. You feel the blues? When the result of expansion is read again, it sometimes is again an active char, but now it doesn't star a correct UTF-8 sequence.

Because of that I wanted to 'freeze' the active chars so that they would be `\writen` to a file unexpanded. A very brutal operation is done: we look at all 256 chars' catcodes and if we find an active one, we `\let` it `\relax`. As the macro does lots and lots of assignments, it shouldn't be used in `\edefs`.

```
\freeze@actives 3286 \def\freeze@actives{%
                3287   \count\z@\z@
                3289   \@whilenum\count\z@<\@cclvi\do{%
                3290     \ifnum\catcode\count\z@=\active
              \~ 3291       \uccode`\~=\count\z@
                3292       \uppercase{\let~\relax}%
                3293     \fi
                3294     \advance\count\z@\@ne}}
```

A macro that typesets all 256 chars of given font. It makes use of `\@whilenum`.

```
   \ShowFont 3300 \newcommand*\ShowFont[1][6]{%
             3301   \begin{multicols}{#1}[The␣current␣font␣(the␣\f@encoding\␣
                      encoding):]
             3302   \parindent\z@
             3303   \count\z@\m@ne
             3304   \@whilenum\count\z@<\@cclv\do{
             3305     \advance\count\z@\@ne
             3306     \␣\the\count\z@:~\char\count\z@\par}
             3307   \end{multicols}}
```

A couple of macros for typesetting liturgic texts such as psalmody of Liturgia Horarum. I wrap them into a declaration since they'll be needed not every time.

```
\liturgiques 3315 \newcommand*\liturgiques[1][red]{% Requires the color package.
             3316   \gmu@RPfor{xcolor}\color%
      \czerwo 3317   \newcommand*\czerwo{\small\color{#1}}% environment
       \czer 3318   \newcommand{\czer}[1]{\leavevmode{\czerwo##1}}% we leave vmode be-
                      cause if we don't, then verse's \everypar would be executed in a group
                      and thus its effect lost.
          \* 3321   \def\*{\czer{$*$}}
          \+ 3322   \def\+{\czer{$\dag$}}
    \nieczer 3323   \newcommand*\nieczer[1]{\textcolor{black}{##1}}}
```

After the next definition you can write `\gmu@RP[`⟨*options*⟩`]{`⟨*package*⟩`}{`⟨*cs*⟩`}` to get the package #2 loaded with options #1 if the cs#3 is undefined.

```
\gmu@RPfor 3328 \newcommand*\gmu@RPfor[3][]{%
           3330   \ifx\relax#1\relax\emptify\gmu@resa
 \gmu@resa 3331   \else␣\def\gmu@resa{[#1]}%
           3332   \fi
           3333   \@xa\RequirePackage\gmu@resa{#2}}
```

Since inside `document` we cannot load a package, we'll redefine `\gmu@RPfor` to issue a request before the error issued by undefined cs.

```
           3339 \AtBeginDocument{%
\gmu@RPfor 3340   \renewcommand*\gmu@RPfor[3][]{%
```

```
    \unless\ifdefined#3%
      \@ifpackageloaded{#2}{}{%
        \typeout{^^J! Package `#2' not loaded!!! (\on@line)^^J}}%
    \fi}}
```

It's very strange to me but it seems that `c` is not defined in the basic math packages. It is missing at least in the *Symbols* book.

\continuum
```
\pprovide\continuum{%
  \gmu@RPfor{eufrak}\mathfrak\ensuremath{\mathfrak{c}}}
```

And this macro I saw in the ltugproc document class nad I liked it.

\iteracro \acro
```
\def\iteracro{%
  \pdef\acro##1{\gmu@acrospaces##1 \gmu@acrospaces}%
}

\iteracro
```

\gmu@acrospaces
```
\def\gmu@acrospaces#1 #2\gmu@acrospaces{%
  \gmu@acroinner#1\gmu@acroinner
  \ifx\relax#2\relax\else
    \space
    \afterfi{\gmu@acrospaces#2\gmu@acrospaces}% when #2 is nonempty, it
        is ended with a space. Adding one more space in this line resulted in an
        infinite loop, of course.
  \fi}
```

\gmu@acroinner
```
\def\gmu@acroinner#1{%
  \ifx\gmu@acroinner#1\relax\else
    \ifcat a\@nx#1\relax%
      \ifnum`#1=\uccode`#1%
        {\acrocore{#1}}%
      \else{#1}% tu było \smallerr
      \fi
    \else#1%
    \fi
    \afterfi\gmu@acroinner
  \fi}
```

We extract the very thing done to the letters to a macro because we need to redefine it in fonts that don't have small caps.

\acrocore
```
\def\acrocore{\scshape\lowercase}
```

Since the fonts I am currently using do not support required font feature, I skip the following definition.

\IMO \AKA
```
\newcommand*\IMO{\acro{IMO}}
\newcommand*\AKA{\acro{AKA}}
```

\usc
```
\pdef\usc#1{{\addfontfeature{Letters=UppercaseSmallCaps}#1}}
```

\uscacro
```
\def\uscacro{\let\acro\usc}
```

Probably the only use of it is loading gmdocc.cls 'as second class'. This command takes first argument optional, options of the class, and second mandatory, the class name. I use it in an article about gmdoc.

\secondclass \ifSecondClass
```
\def\secondclass{%
  \newif\ifSecondClass
  \SecondClasstrue
```

```
\@fileswithoptions\@clsextension}% [outeroff,gmeometric]{gmdocc}
```
it's loading gmdocc.cls with all the bells and whistles except the error message.

Cf. *The TEXbook* exc. 11.6.
A line from LaTeX:

```
%␣\check@mathfonts\fontsize\sf@size\z@\math@fontsfalse\selectfont
```

didn't work as I would wish: in a `\footnotesize`'s scope it still was `\scriptsize`, so too large.

\gmu@dekfraccsimple
```
\def\gmu@dekfraccsimple#1/#2{\leavevmode\kern.1em
  \raise.5ex\hbox{%
    \smaller[3]#1}\gmu@numeratorkern
  \dekfraccslash\gmu@denominatorkern
  {%
    \smaller[3]#2}%
  \if@gmu@mmhbox\egroup\fi}
```

\dekfraccsimple
```
\def\dekfraccsimple{%
  \let\dekfracc@args\gmu@dekfraccsimple
}
```

\dekfraccslash
```
\@ifXeTeX{\def\dekfraccslash{\char"2044␣}}{%
  \def\dekfraccslash{/}}␣% You can define it as the fraction
      slash, \char"2044␣
\dekfraccsimple
```

A macro that acts like `\,` (thin and unbreakable space) except it allows hyphenation afterwards:

\ikern
```
\newcommand*\ikern{\,\penalty10000\hskiposp\relax}
```

And a macro to forbid hyphenation of the next word:

\nohy
\yeshy
```
\newcommand*\nohy{\leavevmode\kernosp\relax}
\newcommand*\yeshy{\leavevmode\penalty10000\hskiposp\relax}
```

In both of the above definitionc 'osp' not `\z@` to allow their writing to and reading from files where @ is 'other'.

`\@ifempty`

\@ifempty
\gmu@reserveda
```
\long\pdef\@ifempty#1#2#3{%
  \def\gmu@reserveda{#1}%
  \ifx\gmu@reserveda\@empty\afterfi{#2}%
  \else\afterfi{#3}\fi
}
```

`\include` not only .tex's

`\include` modified by me below lets you to include files of any extension provided that extension in the argument.

If you want to `\include` a non-.tex file and deal with it with `\includeonly`, give the latter command full file name, with the extension that is.

\gmu@getext
```
\def\gmu@getext#1.#2\@@nil{%
  \def\gmu@filename{#1}%
  \def\gmu@fileext{#2}}

\def\include#1{\relax
```

```
  \ifnum\@auxout=\@partaux
  \@latex@error{\string\include\space cannot be nested}\@eha
  \else \@include#1 \fi}
\@include \def\@include#1 {%
  \gmu@getext#1.\@@nil
  \ifx\gmu@fileext\empty\def\gmu@fileext{tex}\fi
  \clearpage
  \if@filesw
    \immediate\write\@mainaux{\string\@input{\gmu@filename.aux}}%
  \fi
  \@tempswatrue
  \if@partsw
    \@tempswafalse
    \edef\reserved@b{#1}%
    \@for\reserved@a:=\@partlist\do{%
      \ifx\reserved@a\reserved@b\@tempswatrue\fi}%
  \fi
  \if@tempswa
    \let\@auxout\@partaux
    \if@filesw
      \immediate\openout\@partaux \gmu@filename.aux
      \immediate\write\@partaux{\relax}%
    \fi
    \@input@{\gmu@filename.\gmu@fileext}%
    \inclasthook
    \clearpage
    \@writeckpt{\gmu@filename}%
    \if@filesw
      \immediate\closeout\@partaux
    \fi
  \else
```

If the file is not included, reset `\@include` `\deadcycles`, so that a long list of non-included files does not generate an 'Output loop' error.

```
    \deadcycles\z@
    \@nameuse{cp@\gmu@filename}%
  \fi
  \let\@auxout\@mainaux}
\whenonly \newcommand\whenonly[3]{%
\gmu@whonly   \def\gmu@whonly{#1,}%
  \ifx\gmu@whonly\@partlist\afterfi{#2}\else\afterfi{#3}\fi}
```

I assume one usually includes chapters or so so the last page style should be closing.

```
\inclasthook \def\inclasthook{\thispagestyle{closing}}
```

Faked small caps

```
\gmu@scapLetters \def\gmu@scapLetters#1{%
  \ifx#1\relax\relax\else% two \relaxes to cover the case of empty #1.
    \ifcat a#1\relax
      \ifnum\the\lccode`#1=`#1\relax
        {\fakescapscore\MakeUppercase{#1}}% not Plain \uppercase because
                                          that works bad with inputenc.
```

```
      \else#1%
      \fi
    \else#1%
    \fi%
    \@xa\gmu@scapLetters
  \fi}%
\gmu@scapSpaces \def\gmu@scapSpaces#1␣#2\@@nil{%
  \ifx#1\relax\relax
  \else\gmu@scapLetters#1\relax
  \fi
  \ifx#2\relax\relax
  \else\afterfi{\␣\gmu@scapSpaces#2\@@nil}%
  \fi}
\gmu@scapss \def\gmu@scapss#1\@@nil{{\def~{{\nobreakspace}}%
\nobreakspace   \gmu@scapSpaces#1␣\@@nil}}%␣\def\\{{\newline}}\relax adding redefinition of \\ caused stack overflow. Note it disallows hyphenation except at \-.
\fakescaps \pdef\fakescaps#1{{\gmu@scapss#1\@@nil}}
           \let\fakescapscore\gmu@scalematchX
```

Experimente z akcentami patrz no3.tex.

```
\tinycae \def\tinycae{{\tiny\AE}}% to use in \fakescaps[\tiny]{...}
         \RequirePackage{calc}
```

wg \zf@calc@scale pakietu fontspec.

```
         \@ifpackageloaded{fontspec}{%
\gmu@scalar  \def\gmu@scalar{1.0}%
\zf@scale    \def\zf@scale{}%
\gmu@scalematchX  \def\gmu@scalematchX{%
       \begingroup
\gmu@scalar      \ifx\zf@scale\empty\def\gmu@scalar{1.0}%
         \else\let\gmu@scalar\zf@scale\fi
         \setlength\@tempdima{\fontdimen5\font}% 5—ex height
         \setlength\@tempdimb{\fontdimen8\font}% 8—XeTeX synthesized uppercase height.
         \divide\@tempdimb␣by1000\relax
         \divide\@tempdima␣by\@tempdimb
         \setlength{\@tempdima}{\@tempdima*\real{\gmu@scalar}}%
         \gm@ifundefined{fakesc@extrascale}{}{%
           \setlength{\@tempdima}{\@tempdima*\real{%
                \fakesc@extrascale}}}%
         \@tempcnta=\@tempdima
         \divide\@tempcnta␣by␣1000\relax
         \@tempcntb=-1000\relax
         \multiply\@tempcntb␣by\@tempcnta
         \advance\@tempcntb␣by\@tempdima
         \xdef\gmu@scscale{\the\@tempcnta.%
           \ifnum\@tempcntb<100␣0\fi
           \ifnum\@tempcntb<10␣0\fi
           \the\@tempcntb}%
       \endgroup
       \addfontfeature{Scale=\gmu@scscale}%
```

```
}}{\let\gmu@scalematchX\smallerr}
```

\fakescextrascale \fakesc@extrascale
```
\def\fakescextrascale#1{\def\fakesc@extrascale{#1}}
```

See above/see below

To generate a phrase as in the header depending of whether the respective label is before of after.

\wyzejnizej
```
\newcommand*\wyzejnizej[1]{%
  \edef\gmu@tempa{\gm@ifundefined{r@#1}{\arabic{page}}{%
      \@xa\@xa\@xa\@secondoftwo\csname␣r@#1\endcsname}}%
  \ifnum\gmu@tempa<\arabic{page}\relax␣wy\.zej\fi
  \ifnum\gmu@tempa>\arabic{page}\relax␣ni\.zej\fi
  \ifnum\gmu@tempa=\arabic{page}\relax␣\@xa\ignorespaces\fi
}
```

`luzniej` and `napapierki`—environments used in page breaking for money

The name of first of them comes from Polish typesetters' phrase "rozbijać [skład] na papierki"—'to broaden [leading] with paper scratches'.

\napapierkistretch
```
\def\napapierkistretch{0,3pt}% It's quite much for 11/13pt leading.
```

\napapierkicore
```
\def\napapierkicore{\advance\baselineskip%
  by␣optplus\napapierkistretch\relax}
```

napapierki
```
\newenvironment*{napapierki}{%
  \par\global\napapierkicore}{%
  \par\dimen\z@=\baselineskip
  \global\baselineskip=\dimen\z@}% so that you can use \endnapapierki in
      interlacing environments.
```

\gmu@luzniej
```
\newcount\gmu@luzniej
```

\luzniejcore
```
\newcommand*\luzniejcore[1][1]{%
  \advance\gmu@luzniej\@ne% We use this count to check whether we open the
      environment or just set \looseness inside it again.
  \ifnum\gmu@luzniej=\@ne␣␣\multiply\tolerance␣by␣2␣\fi
  \looseness=#1\relax}
```

After `\begin{luzniej}` we may put the optional argument of `\luzniejcore`

luzniej
```
\newenvironment*{luzniej}{\par\luzniejcore}{\par}
```

The starred version does that `\everypar`, which has its advantages and disadvantages.

luzniej*
```
\newenvironment*{luzniej*}[1][1]{%
  \multiply\tolerance␣by␣2\relax
  \everypar{\looseness=#1\relax}}{\par}
```

\nawj
```
\newcommand*\nawj{\kerno,1em\relax}% a kern to be put between parentheses
    and letters with descendants such as j or y in certain fonts.
```

The original \pauza of polski has the skips rigid (one is even a kern). It begins with `\ifhmode` to be usable also at the beginning of a line as the mark of a dialogue.

```
\ifdefined\XeTeXversion
```

\pauza@skipcore \pauzacore
```
\def\pauza@skipcore{\hskipo.2em␣pluso.1em\relax
  \pauzacore\hskip.2em␣pluso.1em\relax\ignorespaces}%
```

\ppauza@skipcore
```
\def\ppauza@skipcore{\unskip\penalty10000\hskipo.2em␣pluso.1em%
```

```
      \relax
3671        -\hskip.2em␣pluso.1em\ignorespaces}
3673 \AtBeginDocument{% to be independent of moment of loading of polski.
\-   3674   \pdef\-{%
3675     \ifhmode
3676       \unskip\penalty10000
3677       \afterfi{%
3678         \@ifnextspace{\pauza@skipcore}%
3679         {\@ifnextMac\pauza@skipcore{%
3680             \pauzacore\penalty\hyphenpenalty\hskip\z@}}}%
3681       \else
```

According to *Instrukcja technologiczna. Skład ręczny i maszynowy* the dialogue dash should be followed by a rigid hskip of ½ em.

```
3685       \leavevmode\pauzacore\penalty10000\hskip.5em\ignorespaces
3686     \fi}%
```

The next command's name consists of letters and therefore it eats any spaces following it, so `\@ifnextspace` would always be false.

```
\pauza   3689   \pdef\pauza{%
3690     \ifhmode
3691       \unskip\penalty10000
3692       \hskip.2em␣pluso.1em\relax
3693       \pauzacore\hskip.2em␣pluso.1em\relax\ignorespaces%
3694     \else
3695       \pauzadial
3696     \fi}%
```

According to *Instrukcja technologiczna. Skład ręczny i maszynowy* the dialogue dash should be followed by a rigid hskip of ½ em.

```
\pauzadial   3701   \pdef\pauzadial{%
3702     \leavevmode\pauzacore\penalty10000\hskip.5em\ignorespaces}
```

And a version with no space at the left, to begin a `\noindent` paragraph or a dialogue in quotation marks:

```
\lpauza   3706   \pdef\lpauza{%
3707     \pauzacore\hskip.2em␣pluso.1em\ignorespaces}%
```

We define \ppauza as an en dash surrounded with thin stretchable spaces and sticking to the upper line or bare but discretionary depending on the next token being space$_{10}$. Of course you'll never get such a space after a literal cs so an explicit \ppauza will always result with a bare discretionary en dash, but if we `\let-\ppauza`…

```
\-   3715   \pdef\-{%
3716     \ifvmode␣␣␣␣\PackageError{gmutils}{%
3717       command␣\bslash␣ppauza␣(en␣dash)␣not␣intended␣for␣vmode.}{%
3718       Use␣\bslash␣ppauza␣(en␣dash)␣only␣in␣number␣and␣numeral␣
               ranges.}%
3719     \else
3720       \afterfi{%
3721         \@ifnextspace{\ppauza@skipcore}{%
3722           \@ifnextMac\ppauza@skipcore{\unskip\discretionary{-}{%
                   -}{-}}}%
3723       }%
3724     \fi
```

```
  }%
\ppauza  \pdef\ppauza{%
   \ifvmode␣␣␣␣\PackageError{gmutils}{%
     command␣\bslash␣ppauza␣(en␣dash)␣not␣intended␣for␣vmode.}{%
     Use␣\bslash␣ppauza␣(en␣dash)␣only␣in␣number␣and␣numeral␣
          ranges.}%
   \else
     \unskip\discretionary{-}{-}{-}%
   \fi}%
\emdash  \def\emdash{\char`\—}
}% of at begin document

\longpauza \def\longpauza{\def\pauzacore{—}}
\pauzacore \longpauza
\shortpauza \def\shortpauza{%
\pauzacore   \def\pauzacore{-\kern.23em\relax\llap{-}}}
\fi% of if XeTeX.
```

If you have all the three dashes on your keyboard (as I do), you may want to use them for short instead of \pauza, \ppauza and \dywiz. The shortest dash is defined to be smart in math mode and result with −.

```
\ifdefined\XeTeXversion
\foone{\catcode`—\active␣\catcode`-\active␣\catcode`-\active}{%
\adashes   \def\adashes{\AtBeginDocument\adashes}% because \pauza is defined at
             begin document.
\adashes   \AtBeginDocument{\def\adashes{%
             \catcode`—\active␣\let—\—%
             \catcode`-\active␣\let-\-%
             \addtomacro\dospecials{\do\-\do\—}%
             \addtomacro\@sanitize{\@makeother\-\@makeother\—}%
             \addtomacro\gmu@septify{\do\-13\do\—13\relax}%
}}}
\else
\relaxen\adashes
\fi
```

The hyphen shouldn't be active IMO because it's used in TEX control such as \hskip-2pt. Therefore we provide the \ahyphen declaration reluctanly, because sometimes we need it and always use it with caution. Note that my active hyphen in vertical and math modes expands to $-_{12}$.

```
\gmu@dywiz \def\gmu@dywiz{\ifmmode-\else
   \ifvmode-\else\afterfifi\dywiz\fi\fi}%

\foone{\catcode`-\active}{%
\ahyphen   \def\ahyphen{\let-\gmu@dywiz\catcode`\-\active}}
```

To get current time. Works in ε-TEXs, icluding XETEX. \czas typesets 17.10 and \czas[:] typesets 17:10.

```
\czas  \newcommand*\czas[1][.]{%
   \the\numexpr(\time-30)/60\relax#1%
   \@tempcnta=\numexpr\time-(\time-30)/60*60\relax
   \ifnum\@tempcnta<10␣0\fi\the\@tempcnta}

\@ifXeTeX{%
\textbullet   \pdef\textbullet{%
```

```
      \iffontchar\font"2022 \char"2022 \else\ensuremath{\bullet}%
          \fi}%
\glyphname  \pprovide\glyphname#1{%
      \XeTeXglyph \numexpr\XeTeXglyphindex "#1"\relax\relax}% since XeTeX
          ... \numexpr is redundant.
}
\textbullet {\def\textbullet{\ensuremath{\bullet}}}
tytulowa  \newenvironment*{tytulowa}{\newpage}{\par\thispagestyle{empty}%
          \newpage}
```

To typeset peoples' names on page 4 (the editorial page):

```
\nazwired  \def\nazwired{\quad\textsc}
```

Typesetting dates in my memoirs

A date in the YYYY-MM-DD format we'll transform into 'DD mmmm YYYY' format or we'll just typeset next two tokens/{...} if the arguments' string begins with --. The latter option is provided to preserve compatibility with already used macros and to avoid a starred version of \thedate and the same time to be able to turn \datef off in some cases (for SevSev04.tex).

```
\polskadata  \newcommand*\polskadata{%
\gmu@datef    \def\gmu@datef##1-##2-##3##4,##5\gmu@datef{%
        \ifx\relax##2\relax##3##4%
        \else
          \ifnum##3\@firstofmany##4o\@@nil=o\relax
          \else
            \ifnumo##3=o\relax
            \else##3%
            \fi##4%
          \fi
        \ifcase##2\relax\or\ stycznia\or\ lutego%
        \or\ marca\or\ kwietnia\or\ maja\or\ czerwca\or\ lipca\or\
            sierpnia%
        \or\ września\or\ października\or\ listopada\or\ grudnia\else
        {}%
        \fi
        \if\relax##1\relax\else\ \fi ##1%
        \fi
        \gmu@datecomma{##5}}% of \gmu@datef.
\gmu@datefsl    \def\gmu@datefsl##1/##2/##3##4,##5\gmu@datefsl{%
        \if\relax##2\relax##3##4%
        \else
        \ifnum##3\@firstofmany##4o\@@nil=o\relax
        \else
        \ifnumo##3=o\relax
        \else##3%
        \fi##4%
        \fi
        \ifcase##2\relax\or\ stycznia\or\ lutego%
        \or\ marca\or\ kwietnia\or\ maja\or\ czerwca\or\ lipca\or\
            sierpnia%
        \or\ września\or\ października\or\ listopada\or\ grudnia\else
```

```
      {}%
      \fi
      \if\relax##1\relax\else\␣\fi␣##1%
      \fi
      \gmu@datecomma{##5}}%
}% of \polskadata
```

```
\polskadata
```

For documentation in English:

\englishdate
\gmu@datef

```
\newcommand*\englishdate{%
  \def\gmu@datef##1-##2-##3##4,##5\gmu@datef{%
    \if\relax##2\relax##3##4%
    \else
      \ifcase##2\relax\or␣January\or␣February%
        \or␣March\or␣April\or␣May\or␣June\or␣July\or␣August%
        \or␣September\or␣October\or␣November\or␣December\else
        {}%
      \fi
    \ifnum##3\@firstofmany##4o\@@nil=o\relax
      \else
        \␣%
        \ifnumo##3=o\relax
        \else##3%
        \fi##4%
        \ifcase##3\@firstofmany##4\relax\@@nil\relax\or␣st\or␣nd%
             \or␣rd\else␣th\fi
      \fi
      \ifx\relax##1\relax\else,\␣\fi␣##1%
    \fi
  \gmu@datecomma{##5}}%
```

\gmu@datefsl

```
  \def\gmu@datefsl##1/##2/##3##4,##5\gmu@datefsl{%
    \if\relax##2\relax##3##4%
    \else
      \ifcase##2\relax\or␣January\or␣February%
        \or␣March\or␣April\or␣May\or␣June\or␣July\or␣August%
        \or␣September\or␣October\or␣November\or␣December\else
        {}%
      \fi
      \ifnum##3\@firstofmany##4o\@@nil=o\relax
      \else
        \␣%
        \ifnumo##3=o\relax
        \else##3%
        \fi##4%
        \ifcase##3\@firstofmany##4\relax\@@nil\relax\or␣st\or␣nd%
             \or␣rd\else␣th\fi
      \fi
      \if\relax##1\relax\else,\␣\fi␣##1%
    \fi
    \gmu@datecomma{##5}}%
}
```

\gmu@datecomma

```
\def\gmu@datecomma#1{% sometimes we want to typeset something like '11 wrześ-
```

nia, czwartek' so we add handling for comma in the \ldate's argument.

```
  \ifx\gmu@datecomma#1\gmu@datecomma\else
    ,\gmu@stripcomma#1%
  \fi
}% of \gmu@datecomma
```

\gmu@stripcomma
```
\def\gmu@stripcomma#1,{#1}
```

\ifgmu@dash
```
\newif\ifgmu@dash
```

\gmu@ifnodash \gmu@tempa
```
\def\gmu@ifnodash#1-#2\@@nil{%
  \def\gmu@tempa{#2}%
  \ifx\gmu@tempa\@empty}
```

\gmu@testdash
```
\pdef\gmu@testdash#1\ifgmu@dash{%
  \gmu@ifnodash#1-\@@nil
    \gmu@dashfalse
  \else
    \gmu@dashtrue
  \fi
  \ifgmu@dash}
```

A word of explanation to the pair of macros above. \gmu@testdash sets \iftrue the \ifgmu@dash switch if the argument contains an explicit -. To learn it, an auxiliary \gmu@ifdash macro is used that expands to an open (un\fied) \ifx that tests whether the dash put by us is the only one in the argument string. This is done by matching the parameter string that contains a dash: if the investigated sequence contains (another) dash, #2 of \gmu@ifdash becomes the rest of it and the 'guardian' dash put by us so then it's nonempty. Then #2 is took as the definiens of \@tempa so if it was empty, \@tempa becomesx equal \@empty, otherwise it isx not.

Why don't we use just \gmu@ifdash? Because we want to put this test into another \if.... A macro that doesn't *mean* \if... wouldn't match its \else nor its \fi while TEX would skip the falsified branch of the external \if... and that would result in the 'extra \else' or 'extra \fi' error.

Therefore we wrap the very test in a macro that according to its result sets an explicit Boolean switch and write this switch right after the testing macro. (Delimiting \gmu@testdash'es parameter with this switch is intended to bind the two which are not one because of TEXnical reasons only.

Warning: this pair of macros may result in 'extra \else/extra \fi' errors however, if \gmu@testdash was \expandaftered.

Dates for memoirs to be able to typeset them also as diaries.

\ifdate
```
\newif\ifdate
```

\bidate
```
\pdef\bidate#1{%
  \ifdate\gmu@testdash#1%
    \ifgmu@dash
      \gmu@datef#1,\gmu@datef
    \else
      \gmu@datefsl#1,\gmu@datefsl
    \fi\fi}
```

\linedate
```
\pdef\linedate{\@ifstar\linedate@@\linedate@}
```

\linedate@@
```
\pdef\linedate@@#1{\linedate@{--}{}#1}}
```

\linedate@
```
\pdef\linedate@#1{\par\ifdate\addvspace{\dateskip}%
  \date@line{\footnotesize\itshape␣\bidate{#1}}%
  \nopagebreak\else%%\ifnum\arabic{dateinsection}>0\dekbigskip\fi
  \addvspace{\bigskipamount}%
```

```
    \fi}% end of \linedate.
\let\dateskip\medskipamount
\rdate \pdef\rdate{\let\date@line\rightline␣\linedate}
\ldate \pdef\ldate{%
\date@line   \def\date@line##1{\par{\raggedright##1\par}}%
     \linedate}
\runindate \newcommand*\runindate[1]{%
     \paragraph{\footnotesize\itshape␣\gmu@datef#1\gmu@datef}%
     \stepcounter{dateinsection}}
```

I'm not quite positive which side I want the date to be put to so let's `let` for now and we'll be able to change it in the very documents.

```
\let\thedate\ldate
```

```
\zwrobcy \pdef\zwrobcy#1{\emph{#1}}␣% ostinato, allegro con moto, garden party etc., także kompliment
```

```
\tytul \pdef\tytul#1{\emph{#1}}
```

Maszynopis w świecie justowanym zrobi delikatną chorągiewkę. (The `maszynopis` environment will make a delicate ragged right if called in a justified world.)

```
maszynopis \newenvironment{maszynopis}[1][]{#1\ttfamily
     \hyphenchar\font=45\relax% this assignment is global for the font.
     \@tempskipa=\glueexpr\rightskip+\leftskip\relax
     \ifdim\gluestretch\@tempskipa=\z@
     \tolerance900
```

it worked well with tolerance = 900.

```
     \advance\rightskip␣by\z@␣pluso,5em\relax\fi
     \fontdimen3\font=\z@% we forbid stretching spaces…
%␣␣\fontdimen4\font=\z@ but allow shrinking them.
     \hyphenpenaltyo␣% not to make TEX nervous: in a typewriting this marvellous
          algorithm of hyphenation should be turned off and every line broken at the
          last allowable point.
     \StoreMacro\pauzacore
\pauzacore   \def\pauzacore{-\rlap{\kern-o,3em-}-}%
}{\par}
```

```
\justified \newcommand*\justified{%
     \leftskip=1\leftskip% to preserve the natural length and discard stretch and
          shrink.
     \rightskip=1\rightskip
     \parfillskip=1\parfillskip
     \advance\parfillskip␣by␣osp␣plus␣1fil\relax
     \let\\\@normalcr}
```

To conform Polish recommendation for typesetting saying that a paragraph's last line leaving less than `\parindent` should be stretched to fill the text width:

```
\fullpar \newcommand*\fullpar{%
     \hunskip
     \bgroup\parfillskip\z@skip\par\egroup}
```

To conform Polish recommendation for typesetting saying that the last line of a paragraph has to be `2\parindent` long at least. The idea is to set `\parfillskip` naturally rigid and long as `\textwidth-2\parindent`, but that causes non-negligible shrinking of the interword spaces so we provide a declaration to catch the proper glue where the parindent is set (e.g. in footnotes parindent is 0 pt)

```
\twoparinit 4045 \newcommand*\twoparinit{% the name stands for 'last paragraph line's length
                    minimum two \parindent.
            4047   \edef\twopar{%
            4048     \hunskip% it's \protected, remember?
            4049     \bgroup
            4050     \parfillskip=\the\glueexpr
            4051     \dimexpr\textwidth-2\parindent\relax
            4052     minus\dimexpr\textwidth-2\parindent\relax
            4053     \relax% to delimit \glueexpr.
            4054     \relax% to delimit the assignment.
            4055     \par\egroup
            4056   }% of \gmu@twoparfill
            4061 }% of \twoparinit.
```

For dati under poems.

```
\wherncore  4068 \newcommand\wherncore[1]{%
            4069     \rightline{%
            4070     \parbox{0,7666\textwidth}{
            4071       \leftskipposp␣plus␣\textwidth
            4072       \parfillskipposp\relax
            4073       \let\\\linebreak
            4074       \footnotesize␣#1}}}
   \whern   4076 \def\whern{%
            4077   \@ifstar\wherncore{\vskip\whernskip\wherncore}}
\whernskip  4080 \newskip\whernskip
            4081 \whernskip2\baselineskip␣minus␣2\baselineskip\relax
  \whernup  4083 \newcommand\whernup[1]{\par\wherncore{#1}}
```

A left-slanted font

Or rather a left Italic *and* left slanted font. In both cases we sample the skewness of the itshape font of the current family, we reverse it and apply to `\itshape` in `\litshape` and `\textlit` and to `\sl` in `\lsl`. Note a slight asymmetry: `\litshape` and `\textlit` take the current family while `\lsl` and `\textlsl` the basic Roman family and basic (serif) Italic font. Therefore we introduce the `\lit` declaration for symmetry, that declaration left-slants `\it`.

I introduced them first while typesetting E. Szarzyński's *Letters* to follow his (elaborate) hand-writing and now I copy them here when need left Italic for his *Albert Camus'* The Plague to avoid using bold font.

Of course it's rather esoteric so I wrap all that in a declaration.

```
\leftslanting 4107 \def\leftslanting{%
   \litshape  4108   \pdef\litshape{%
            4110     \itshape
            4111     \@tempdima=-2\fontdimen1\font
            4112     \advance\leftskip␣by\strip@pt\fontdimen1\font␣ex␣% to assure al least
                        the lowercase letters not to overshoot to the (left) margin. Note this has
                        any effect only if there is a \par in the scope.
            4116     \edef\gmu@tempa{%
            4117       \@nx\addfontfeature{FakeSlant=\strip@pt\@tempdima}}% when
                          not \edefed, it caused an error, which is perfectly understandable.
            4120     \gmu@tempa}%
   \textlit 4123   \pdef\textlit##1{%
```

```
    {\litshape##1}}%
\lit  \pdef\lit{\rm\litshape}%
\lsl  \pdef\lsl{{\it
        \@tempdima=-\fontdimen1\font
        \xdef\gmu@tempa{%
          \@nx\addfontfeature{RawFeature={slant=\strip@pt%
               \@tempdima}}}%
      \rm␣␣% Note in this declaration we left-slant the basic Roman font not the it-
            shape of the current family.
      \gmu@tempa}%
```

Now we can redefine \em and \emph to use left Italic for nested emphasis. In Polish typesetting there is bold in nested emphasis as I have heard but we don't like bold since it perturbs homogeneous greyness of a page. So we introduce a three-cycle instead of two-: Italic, left Italic, upright.

```
\em  \pdef\em{%
       \ifdim\fontdimen1\font=\z@␣␣\itshape
       \else
         \ifdim\fontdimen1\font>\z@␣\litshape
         \else␣\upshape
         \fi
       \fi}%
     \pdef\emph##1{%
       {\em##1}}%
}% of \leftslanting.
```

Thousand separator

```
\thousep  \pdef\thousep#1{% a macro that'll put the thousand separator between every two
            three-digit groups.
```

First we check whether we have at least five digits.

```
    \gmu@thou@fiver#1\relax\relax\relax\relax\relax% we put
          five \relaxes after the parameter to ensure the string will
          meet \gmu@thou@fiver's definition.
    \gmu@thou@fiver{#1}{% if more than five digits:
      \emptify\gmu@thou@put
      \relaxen\gmu@thou@o\relaxen\gmu@thou@i\relaxen\gmu@thou@ii
      \@tempcnta\z@
      \gmu@thou@putter#1\gmu@thou@putter
      \gmu@thou@put
    }}
\gmu@thou@fiver  \def\gmu@thou@fiver#1#2#3#4#5\gmu@thou@fiver#6#7{%
      \ifx\relax#5\relax\afterfi{#6}\else\afterfi{#7}\fi}
\gmu@thou@putter  \def\gmu@thou@putter#1#2{% we are sure to have at least five tokens before the
            guardian \gmu@thou@putter.
    \advance\@tempcnta\@ne
    \@tempcntb\@tempcnta
    \divide\@tempcntb3\relax
    \@tempcnta=\numexpr\@tempcnta-\@tempcntb*3
    \edef\gmu@thou@put{\gmu@thou@put#1%
      \ifx\gmu@thou@putter#2\else
        \ifcase\@tempcnta
```

```
4187          \gmu@thou@o\or\gmu@thou@i\or\gmu@thou@ii% all three cses are
                  yet \relax so we may put them in an \edef safely.
4190        \fi
4191      \fi}% of \edef
4192    \ifx\gmu@thou@putter#2% if we are at end of the digits…
4193      \edef\gmu@tempa{%
4194        \ifcase\@tempcnta
4195          \gmu@thou@o\or\gmu@thou@i\or\gmu@thou@ii
4196        \fi}%
4197      \@xa\let\gmu@tempa\gmu@thousep% … we set the proper cs…
4198    \else% or …
4199      \afterfi{% iterate.
4200        \gmu@thou@putter#2}% of \afterfi
4201    \fi% of if end of digits.
4202  }% of \gmu@thou@putter.
```

\gmu@thousep

```
4204  \def\gmu@thousep{\,}% in Polish the recommended thousand separator is a thin
        space.
```

So you can type \thousep{7123123123123} to get 7 123 123 123 123. But what if you want to apply \thousep to a count register or a \numexpr? You should write one or two \expandafters and \the. Let's do it only once for all:

\xathousep

```
4212  \pdef\xathousep#1{\@xa\thousep\@xa{\the#1}}
```

Now write \xathousep{\numexpr␣10*9*8*7*6*120} to get 3 628 800.

\shortthousep \thous

```
4216  \def\shortthousep{%
4217    \pdef\thous{%
4218      \ifmmode\hbox\bgroup\@gmu@mmhboxtrue\fi
4219      \afterassignment\thous@inner
4220      \@tempcnta=}%
```

\thous@inner

```
4222    \def\thous@inner{%
4223      \ifnum\@tempcnta<0␣$-$%
4224        \@tempcnta=-\@tempcnta
4225      \fi
4226      \xathousep\@tempcnta
4227      \if@gmu@mmhbox\egroup
4228      \else\afterfi{\@ifnextcat␣a\space{}}%
4229      \fi}%
4230  }% of \shortthousep.
```

And now write \thous␣3628800 to get 3 628 800 even with a blank space (beware of the range of TEX's counts).

hyperref's \nolinkurl into \url*

\urladdstar

```
4238  \def\urladdstar{%
4239    \AtBeginDocument{%
4240      \@ifpackageloaded{hyperref}{%
4241        \StoreMacro\url
```

\url

```
4242        \def\url{\@ifstar{\nolinkurl}{\storedcsname{url}}}%
4243      }{}}}
4245  \@onlypreamble\urladdstar
4248  \endinput
```

d. The gmiflink Package[1]

Written by Grzegorz 'Natror' Murzynowski,
natror at o2 dot pl


```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{gmiflink}
      [2006/08/16 v0.97 Conditionally hyperlinking package (GM)]
```

Introduction, usage

This package protects you against an error when a link is dangling and typesets some plain text instead of a hyperlink then. It is intended for use with the hyperref package. Needs *two* LaTeX runs.

I used it for typesetting the names of the objects in a documentation of a computer program. If the object had been defined a `\hyperlink` to its definition was made, otherwise a plain object's name was typeset. I also use this package in authomatic making of hyperlinking indexes.

The package provides the macros `\gmiflink`, `\gmifref` and `\gmhypertarget` for conditional making of hyperlinks in your document.

\gmhypertarget `\gmhypertarget[⟨name⟩]{⟨text⟩}` makes a `\hypertarget{⟨@name⟩}{⟨text⟩}` and a `\label{⟨@name⟩}`.

\gmiflink `\gmiflink[⟨name⟩]{⟨text⟩}` makes a `\hyperlink{⟨@name⟩}{⟨text⟩}` to a proper hypertarget if the corresponding *label* exists, otherwise it typesets ⟨*text*⟩.

\gmifref `\gmifref[⟨name⟩]{⟨text⟩}` makes a (hyper-) `\ref{⟨@name⟩}` to the given label if the label exists, otherwise it typesets ⟨*text*⟩.

The ⟨*@name*⟩ argument is just ⟨*name*⟩ if the ⟨*name*⟩ is given, otherwise it's ⟨*text*⟩ in all three macros.

For the example(s) of use, examine the gmiflink.sty file, lines 45–58.

The remarks about installation and compiling of the documentation are analogous to those in the chapter gmdoc.sty and therefore ommitted.

Contents of the gmiflink.zip archive

The distribution of the gmiflink package consists of the following three files and a TDS-compliant archive.

gmiflink.sty
README

[1] This file has version number v0.97 dated 2006/08/16.

gmiflink.pdf
gmiflink.tds.zip

The code

```
\@ifpackageloaded{hyperref}{}{\message␣{^^J^^J␣gmiflink␣package:
    There's␣no␣use␣of␣me␣without␣hyperref␣package,␣I␣end␣my␣
        input.^^J}\endinput}
\providecommand\empty{}
```

A new counter, just in case

GMhlabel
```
\newcounter{GMhlabel}
\setcounter{GMhlabel}{0}
```

The macro given below creates both hypertarget and hyperlabel, so that you may reference both ways: via `\hyperlink` and via `\ref`. It's pattern is the `\label` macro, see LaTeX Source2e, file x, line 32.

But we don't want to gobble spaces before and after. First argument will be a name of the hypertarget, by default the same as typeset text, i.e., argument #2.

\gmhypertarget
```
\DeclareRobustCommand*\gmhypertarget{%
  \@ifnextchar{[}{\gm@hypertarget}{\@dblarg{\gm@hypertarget}}}
```

\gm@hypertarget
```
\def\gm@hypertarget[#1]#2{% If argument #1 = \empty, then we'll use #2, i.e.,
      the same as name of hypertarget.
  \refstepcounter{GMhlabel}% we \label{\gmht@firstpar}
  \hypertarget{#1}{#2}%
  \protected@write\@auxout{}{%
    \string\newlabel{#1}{{#2}{\thepage}{\relax}{GMhlabel.%
        \arabic{GMhlabel}}{}}}%
}% end of \gm@hypertartget.
```

We define a macro such that if the target exists, it makes `\ref`, else it typesets ordinary text.

\gmifref
```
\DeclareRobustCommand*\gmifref{\@ifnextchar{[}{\gm@ifref}{%]
    \@dblarg{\gm@ifref}}}
```

\gm@ifref
```
\def\gm@ifref[#1]#2{%
  \expandafter\ifx\csname␣r@#1\endcsname\relax\relax%
  #2\else\ref{#1}\fi%
}% end of \gm@ifref
```

\gmiflink
```
\DeclareRobustCommand*\gmiflink{\@ifnextchar{[}{\gm@iflink}{%
    \@dblarg{\gm@iflink}}}
```

\gm@iflink
```
\def\gm@iflink[#1]#2{%
  \expandafter\ifx\csname␣r@#1\endcsname\relax\relax%
  #2\else\hyperlink{#1}{#2}\fi%
}% end of \gm@iflink
```

It's robust because when just `\newcommand*`ed, use of `\gmiflink` in an indexing macro resulted in errors: `\@ifnextchar` has to be `\noexpanded` in `\edefs`.

```
\endinput
```

The old version — all three were this way primarily.

```
\newcommand*\gmiflink[2][\empty]{{%
  \def\gmht@test{\empty}\def\gmht@firstpar{#1}%
```

```
  \ifx\gmht@test\gmht@firstpar\def\gmht@firstpar{#2}\fi%
  \expandafter\ifx\csname r@\gmht@firstpar\endcsname\relax\relax%
  #2\else\hyperlink{\gmht@firstpar}{#2}\fi%
}}
```

e. The gmverb Package[1]

November 22, 2008

This is (a documentation of) file gmverb.sty, intended to be used with LaTeX 2ε as a package for a slight redefinition of the `\verb` macro and `verbatim` environment and for short verb marking such as `|\mymacro|`.

Written by Natror (Grzegorz Murzynowski),
natror at o2 dot pl

Many thanks to my TeX Guru Marcin Woliński for his TeXnical support.

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{gmverb}
    [2008/11/12 v0.91 After shortvrb (FM) but my way (GM)]
```

Intro, usage

This package redefines the `\verb` command and the `verbatim` environment so that the verbatim text can break into lines, with % (or another character chosen to be the comment char) as a 'hyphen'. Moreover, it allows the user to define his own `verbatim`-like environments provided their contents would be not *horribly* long (as long as a macro's argument may be at most).

This package also allows the user to declare a chosen char(s) as a 'short verb' e.g., to write `|\a\verbatim\example|` instead of `\verb|\a\verbatim\example|`.

The gmverb package redefines the `\verb` command and the `verbatim` environment in such a way that ␣, { and \ are breakable, the first with no 'hyphen' and the other two with the comment char as a hyphen. I.e. {⟨*subsequent text*⟩} breaks into {%
⟨*subsequent text*⟩} and ⟨*text*⟩`\mymacro` breaks into ⟨*text*⟩%
`\mymacro`.

`\fixbslash` (If you don't like linebreaking at backslash, there's the `\fixbslash` declaration (observing the common scoping rules, hence OCSR) and an analogous declaration for the `\fixlbrace` left brace: `\fixlbrace`.)

The default 'hyphen' is % since it's the default comment char. If you wish another `\VerbHyphen` char to appear at the linebreak, use the `\VerbHyphen` declaration that takes \⟨*char*⟩ as the only argument. This declaration is always global.

`\verbeolOK` Another difference is the `\verbeolOK` declaration (OCSR). Within its scope, `\verb` allows an end of a line in its argument and typesets it just as a space.

[1] This file has version number v0.91 dated 2008/11/12.

As in the standard version(s), the plain `\verb` typesets the spaces blank and `\verb*` makes them visible.

\MakeShortVerb Moreover, gmverb provides the `\MakeShortVerb` macro that takes a one-char control sequence as the only argument and turns the char used into a short verbatim delimiter, e.g., after `\MakeShortVerb*\|` (as you guess, the declaration has its starred version, which is for visible spaces, and the non-starred for the spaces blank) you may type `|% \mymacro|` to get `\mymacro` instead of typing `\verb+\mymacro+`. Because the char used in this example is my favourite and used just this way by DEK in the *The TEXbook*'s \dekclubs format, gmverb provides a macro `\dekclubs` as a shorthand for `\MakeShortVerb(*)% \|`.

Be careful because such active chars may interfere with other things, e.g., the `|` with the vertical marker in tables and with the tikz package. If this happens, you can declare \DeleteShortVerb e.g., `\DeleteShortVerb\|` and the previous meaning of the char used shall be restored.

One more difference between gmverb and shortvrb is that the chars `\activeated` by `\MakeShortVerb` in the math mode behave as if they were 'other', so you may type e.g., `$|$` to get | and + `\activeated` this way is in the math mode typeset properly etc.

\OldMakeShortVerb However, if you don't like such a conditional behaviour, you may use `\OldMakeShortVerb` instead, what I do when I like to display short verbatims in displaymath.

\dekclubs There's one more declaration provided by gmverb: `\dekclubs`, which is a shorthand \dekclubs* for `\MakeShortVerb\|`, `\dekclubs*` for `\MakeShortVerb*\|` and `\olddekclubs` for \olddekclubs `\OldMakeShortVerb\|`.

\edverbs There's one more declaration, `\edverbs` that makes `\[` checks if the next token is an active char and opens an `\hbox` if so. That is done so that you can write (in `\edverbs`' and `\dekclubs`' scope)

```
\[|<verbatim stuff>|\]
```

instead of

```
\[\hbox{|<verbatim stuff>|}\]
```

to get a displayed shortverb.

Both versions of `\dekclubs` OCSR.

The `verbatim` environment inserts `\topsep` before and after itself, just as in standard version (as if it was a `list`).

In August 2008 Will Robertson suggested grey visible spaces for gmdoc. I added a respective option to gmdoc but I find them so nice that I want to make them available for \VisSpacesGrey all verbatim environments so I bring here the declaration `\VisSpacesGrey`. It redefines only the visible spaces so affects `\verb*` and `verbatim*` and not the unstarred versions. The colour of the visible spaces is named `visspacesgrey` and you can redefine it xcolor way.

As many good packages, this also does not support any options.

The remarks about installation and compiling of the documentation are analogous to those in the chapter gmdoc.sty and therefore ommitted.

Contents of the gmverb.zip archive

The distribution of the gmverb package consists of the following three files and a TDS-compliant archive.

gmverb.sty
README
gmverb.pdf
gmverb.tds.zip

This package requires another package of mine, gmutils, also available on CTAN.

The code

Preliminaries

```
\RequirePackage{gmutils}[2008/10/08]
```

For \firstofone, \afterfi, \gmobeyspaces, \@ifnextcat, \foone and \noexpand's and \expandafter's shorthands \@nx and \@xa resp.

Someone may want to use another char for comment, but we assume here 'orthodoxy'. Other assumptions in gmdoc are made. The 'knowledge' what char is the comment char is used to put proper 'hyphen' when a verbatim line is broken.

\verbhyphen
```
\let\verbhyphen\xiipercent
```

Provide a declaration for easy changing it. Its argument should be of \⟨*char*⟩ form (of course, a ⟨*char*⟩$_{12}$is also allowed).

\VerbHyphen
```
\def\VerbHyphen#1{%
  {\escapechar\m@ne
    \@xa\gdef\@xa\verbhyphen\@xa{\string#1}}}
```

As you see, it's always global.

The breakables

Let's define a \discretionary left brace such that if it breaks, it turns {% at the end of line. We'll use it in almost Knuthian \ttverbatim—it's part of this 'almost'.

\breaklbrace
```
\def\breaklbrace{%
  \discretionary{\xiilbrace\verbhyphen}{}{\xiilbrace}}
\foone{\catcode`\[=1 \catcode`\{=\active \catcode`\]=2 }%
[%
```
\dobreaklbrace
```
   \def\dobreaklbrace[\catcode`\{=\active
   \def{%
```
\breaklbrace
```
     [\breaklbrace\gm@lbracehook]]%
]
```

Now we only initialize the hook. Real use of it will be made in gmdoc.

```
\relaxen\gm@lbracehook
```

The \bslash macro defined below I use also in more 'normal' TEXing, e.g., to \typeout some \outer macro's name.

```
\foone{\catcode`\!=o \@makeother\\}%
{%
```
\bslash
```
  !def!bslash{\}%
```
\breakbslash
```
  !def!breakbslash{!discretionary{!verbhyphen}{\}{\}}%
}
```

Sometimes linebreaking at a backslash may be unwelcome. The basic case, when the first cs in a verbatim breaks at the lineend leaving there %, is covered by line 624. For the others let's give the user a countercrank:

\fixbslash
```
\newcommand*\fixbslash{\let\breakbslash=\bslash}%
```
to use due to the common scoping rules. But for the special case of a backslash opening a verbatim scope, we deal specially in the line 624.

Analogously, let's provide a possibility of 'fixing' the left brace:

\fixlbrace
```
\newcommand*\fixlbrace{\let\breaklbrace=\xiilbrace}
```

```
\foone{\catcode`\!=o \catcode`\\=\active}%
```

```
{%
  !def!dobreakbslash{!catcode`!\=!active␣!def\{!breakbslash}}%
}
```

The macros defined below, `\visiblebreakspaces` and `\xiiclub` we'll use in the almost Knuthian macro making verbatim. This 'almost' makes a difference.

```
\foone{\catcode`\␣=12␣}% note this space is 10 and is gobbled by parsing the
      number. \visiblespace is \let in gmutils to \xiispace or \xxt@visiblespace
      of xltxtra if available.
\def\breakablevisspace{\discretionary{\visiblespace}{}{%
      \visiblespace}}
\foone\obeyspaces% it's just re\catcode'ing.
{%
\newcommand*\activespace{␣}%
\newcommand*\dobreakvisiblespace{\def␣{\breakablevisspace}\obeyspaces}%%
      \defing it caused a stack overflow disaster with gmdoc.
\newcommand*\dobreakblankspace{\let␣=\space\obeyspaces}%
}
\foone{\@makeother\|}{%
  \def\xiiclub{|}}
```

Almost-Knuthian `\ttverbatim`

`\ttverbatim` comes from *The TEXbook* too, but I add into it a LaTeX macro changing the `\catcode`s and make spaces visible and breakable and left braces too.

```
\newcommand*\ttverbatim{%
  \let\do=\do@noligs␣\verbatim@nolig@list
  \let\do=\@makeother␣\dospecials
  \dobreaklbrace\dobreakbslash
  \dobreakspace
  \tt
  \ttverbatim@hook}
```

While typesetting stuff in the QX fontencoding I noticed there were no spaces in verbatims. That was because the QX encoding doesn't have any reasonable char at position 32. So we provide a hook in the very core of the verbatim making macros to set proper fontencoding for instance.

```
\@emptify\ttverbatim@hook
\def\VerbT1{\def\ttverbatim@hook{\fontencoding{T1}\selectfont}}
```

We wish the visible spaces to be the default.

```
\let\dobreakspace=\dobreakvisiblespace
```

The core: from shortvrb

The below is copied verbatim ;-) from doc.pdf and then is added my slight changes.

```
\def\MakeShortVerb{%
  \@ifstar
  {\def\@shortvrbdef{\verb*}\@MakeShortVerb}%
  {\def\@shortvrbdef{\verb}\@MakeShortVerb}}
\def\@MakeShortVerb#1{%
  \@xa\ifx\csname␣cc\string#1\endcsname\relax
```

```
  \@shortvrbinfo{Made }{#1}\@shortvrbdef
  \add@special{#1}%
  \AddtoPrivateOthers#1% a macro to be really defined in gmdoc.
  \@xa
  \xdef\csname cc\string#1\endcsname{\the\catcode`#1}%
  \begingroup
  \catcode`\~\active \lccode`\~`#1%
  \lowercase{%
    \global\@xa\let
    \csname ac\string#1\endcsname~%
    \@xa\gdef\@xa~\@xa{%
      \@xa\ifmmode\@xa\string\@xa~%
      \@xa\else\@xa\afterfi{\@shortvrbdef~}\fi}}% This terrible number
          of \expandafters is to make the shortverb char just other in the math
          mode (my addition).
  \endgroup
  \global\catcode`#1\active
 \else
 \@shortvrbinfo\@empty{#1 already}{\@empty\verb(*)}%
 \fi}
```

\DeleteShortVerb

```
\def\DeleteShortVerb#1{%
  \@xa\ifx\csname cc\string#1\endcsname\relax
  \@shortvrbinfo\@empty{#1 not}{\@empty\verb(*)}%
  \else
  \@shortvrbinfo{Deleted }{#1 as}{\@empty\verb(*)}%
  \rem@special{#1}%
  \global\catcode`#1\csname cc\string#1\endcsname
  \global \@xa\let \csname cc\string#1\endcsname \relax
  \ifnum\catcode`#1=\active
  \begingroup
  \catcode`\~\active \lccode`\~`#1%
  \lowercase{%
    \global\@xa\let\@xa~%
    \csname ac\string#1\endcsname}%
  \endgroup \fi \fi}
```

My little addition

\gmv@packname \gmv@packname

```
\@ifpackageloaded{gmdoc}{%
  \def\gmv@packname{gmdoc}}{%
  \def\gmv@packname{gmverb}}
```

\@shortvrbinfo

```
\def\@shortvrbinfo#1#2#3{%
  \PackageInfo{\gmv@packname}{%
   ^^J\@empty #1\@xa\@gobble\string#2 a short reference
    for \@xa\string#3}}
```

\add@special

```
\def\add@special#1{%
  \rem@special{#1}%
  \@xa\gdef\@xa\dospecials\@xa
  {\dospecials \do #1}%
  \@xa\gdef\@xa\@sanitize\@xa
  {\@sanitize \@makeother #1}}
```

For the commentary on the below macro see the doc package's documentation. Here let's only say it's just amazing: so tricky and wicked use of \do. The internal macro

\rem@special defines \do to expand to nothing if the \do's argument is the one to be removed and to unexpandable cses \do and ⟨*\do's argument*⟩ otherwise. With \do defined this way the entire list is just globally expanded itself. Analogous hack is done to the \@sanitize list.

\rem@special
```
\def\rem@special#1{%
  \def\do##1{%
    \ifnum`#1=`##1␣\else␣\@nx\do\@nx##1\fi}%
  \xdef\dospecials{\dospecials}%
  \begingroup
  \def\@makeother##1{%
    \ifnum`#1=`##1␣\else␣\@nx\@makeother\@nx##1\fi}%
  \xdef\@sanitize{\@sanitize}%
  \endgroup}
```

And now the definition of verbatim itself. As you'll see (I hope), the internal macros of it look for the name of the current environment (i.e., \@currenvir's meaning) to set their expectation of the environment's \end properly. This is done to allow the user to define his/her own environments with \verbatim inside them. I.e., as with the verbatim package, you may write \verbatim in the begdef of your environment and then necessarily \endverbatim in its enddef. Of course (or maybe *surprisingly*), the commands written in the begdef after \verbatim will also be executed at \begin{⟨*environment*⟩}.

verbatim
\verbatim
```
\def\verbatim{%
  \edef\gmv@hyphenpe{\the\hyphenpenalty}%
  \edef\gmv@exhyphenpe{\the\exhyphenpenalty}%
  \@beginparpenalty␣\predisplaypenalty␣\@verbatim
  \frenchspacing␣\gmobeyspaces␣\@xverbatim
  \hyphenpenalty=\gmv@hyphenpe\relax
  \exhyphenpenalty=\gmv@exhyphenpe
  \hyphenchar\font=\m@ne}% in the LaTeX version there's \@vobeyspaces instead of \gmobeyspaces.
```

verbatim*
```
\@namedef{verbatim*}{\@beginparpenalty␣\predisplaypenalty␣%
    \@verbatim
  \@sxverbatim}
```

\endverbatim
```
\def\endverbatim{\@@par
  \ifdim\lastskip␣>\z@
    \@tempskipa\lastskip␣\vskip␣-\lastskip
    \advance\@tempskipa\parskip␣\advance\@tempskipa␣-%
        \@outerparskip
    \vskip\@tempskipa
  \fi
  \addvspace\@topsepadd
  \@endparenv}
```

```
\n@melet{endverbatim*}{endverbatim}
```

```
\begingroup␣\catcode␣`!=0␣%
\catcode␣`[=␣1␣\catcode`]=2␣%
\catcode`\{=\active
\@makeother\}%
\catcode`\\=\active%
```

\@xverbatim
```
!gdef!@xverbatim[%
  !edef!verbatim@edef[%
    !def!noexpand!verbatim@end%
      ####1!noexpand\end!noexpand{!@currenvir}[%
```

```
      ####1!noexpand!end[!@currenvir]]]%
  !verbatim@edef
  !verbatim@end]%
!endgroup
```

\@sxverbatim
```
\let\@sxverbatim=\@xverbatim
```

F. Mittelbach says the below is copied almost verbatim from LaTeX source, modulo `\check@percent`.

\@verbatim
```
\def\@verbatim{%
```

Originally here was just `\trivlist␣\item[]`, but it worked badly in my document(s), so let's take just highlights of if.

```
  \parsep\parskip
```

From `\@trivlist`:

```
  \if@noskipsec␣\leavevmode␣\fi
  \@topsepadd␣\topsep
  \ifvmode
    \advance\@topsepadd␣\partopsep
  \else
    \unskip␣\par
  \fi
  \@topsep␣\@topsepadd
  \advance\@topsep␣\parskip
  \@outerparskip␣\parskip
```

(End of `\trivlistlist` and `\@trivlist` highlights.)

```
  \@@par\addvspace\@topsep
  \if@minipage\else\vskip\parskip\fi
  \advance\@totalleftmargin\verbatimleftskip
  \raggedright
  \leftskip\@totalleftmargin% so many assignments to preserve the list
      thinking for possible future changes. However, we may be sure no
      internal list shall use \@totalleftmargin as far as no inner
      environments are possible in verbatim(*).
  \@@par% most probably redundant.
  \@tempswafalse
  \def\par{% but I don't want the terribly ugly empty lines when a blank
      line is met. Let's make them gmdoc-like i.e., let a vertical space
      be added as in between stanzas of poetry. Originally
      \if@tempswa\hbox{}\fi, in my version will be
    \ifvmode\if@tempswa\addvspace\stanzaskip\@tempswafalse\fi\fi
    \@@par
    \penalty\interlinepenalty␣\check@percent}%
  \everypar{\@tempswatrue\hangindent\verbatimhangindent\hangafter%
      \@ne}% since several chars are breakable, there's a possibility of
      breaking some lines. We wish them to be hanging indented.
  \obeylines
  \ttverbatim}
```

\stanzaskip
```
\@ifundefined{stanzaskip}{\newlength\stanzaskip}{}
\stanzaskip=\medskipamount
```

\verbatimleftskip
```
\newskip\verbatimleftskip
\verbatimleftskip\leftmargini
```

\verbatimhangindent
```
\newskip\verbatimhangindent
\verbatimhangindent=3em
```

\check@percent
```
\providecommand*\check@percent{}
```

In the gmdoc package shall it be defined to check if the next line begins with a comment char.

Similarly, the next macro shall in gmdoc be defined to update a list useful to that package. For now let it just gobble its argument.

\AddtoPrivateOthers
```
\providecommand*\AddtoPrivateOthers[1]{}
```

Both of the above are \provided to allow the user to load gmverb after gmdoc (which would be redundant since gmdoc loads this package on its own, but anyway should be harmless).

Let's define the 'short' verbatim command.

\verb* \verb
```
\def\verb{\relax\ifmmode\hbox\else\leavevmode\null\fi
  \bgroup
  \ttverbatim
  \gm@verb@eol
  \@ifstar{\@sverb@chbsl}{\gmobeyspaces\frenchspacing\@sverb@chbsl}}%
```
in the LaTeX version there's \@vobeyspaces instead of \gmobeyspaces.

\@sverb@chbsl
```
\def\@sverb@chbsl#1{\@sverb#1\check@bslash}
```

\@def@breakbslash
```
\def\@def@breakbslash{\breakbslash}%
```
because \ is \defined as \breakbslash not \let.

For the special case of a backslash opening a (short) verbatim, in which it shouldn't be breakable, we define the checking macro.

\check@bslash
```
\def\check@bslash{\@ifnextchar{\@def@breakbslash}{\bslash%
    \@gobble}{}}
```

```
\let\verb@balance@group\@empty
```

\verb@egroup
```
\def\verb@egroup{\global\let\verb@balance@group\@empty\egroup}
```

\gm@verb@eol
```
\let\gm@verb@eol\verb@eol@error
```

The latter is a LaTeX 2_ε kernel macro that \activeates line end and defines it to close the verb group and to issue an error message. We use a separate cs'cause we are not quite positive to the forbidden line ends idea. (Although the allowed line ends with a forgotten closing shortverb char caused funny disasters at my work a few times.) Another reason is that gmdoc wishes to redefine it for its own queer purpose.

However, let's leave my former 'permissive' definition under the \verb@eol name.

```
\begingroup
\obeylines\obeyspaces%
\gdef\verb@eolOK{\obeylines%
```
\check@percent
```
\def^^M{␣\check@percent}%
}%
\endgroup
```

The \check@percent macro here is \provided to be \@empty but in gmdoc employed shall it be.

Let us leave (give?) a user freedom of choice:

\verbeolOK
```
\def\verbeolOK{\let\gm@verb@eol\verb@eolOK}
```

And back to the main matter,

```
\def\@sverb#1{%
```

```
  \catcode`#1\active␣\lccode`\~`#1%
  \gdef\verb@balance@group{\verb@egroup
    \@latex@error{Illegal␣use␣of␣\bslash␣verb␣command}\@ehc}%
  \aftergroup\verb@balance@group
  \lowercase{\let~\verb@egroup}}
\verbatim@nolig@list \def\verbatim@nolig@list{\do\`\do\<\do\>\do\,\do\'\do\-}
      \do@noligs \def\do@noligs#1{%
  \catcode`#1\active
  \begingroup
  \lccode`\~=`#1\relax
  \lowercase{\endgroup\def~{\leavevmode\kern\z@\char`#1}}}
```

And finally, what I thought to be so smart and clever, now is just one of many possible uses of a general almost Rainer Schöpf's macro:

```
     \dekclubs \def\dekclubs{\@ifstar{\MakeShortVerb*\|}{\MakeShortVerb\|}}
\olddekclubs \def\olddekclubs{\OldMakeShortVerb\|}
```

But even if a shortverb is unconditional, the spaces in the math mode are not printed. So,

```
     \edverbs \newcommand*\edverbs{%
  \let\gmv@dismath\[%
  \let\gmv@edismath\]%
  \def\[{%
    \@ifnextac\gmv@disverb\gmv@dismath}%
  \relaxen\edverbs}%
  \gmv@disverb \def\gmv@disverb{%
  \gmv@dismath
  \hbox\bgroup\def\]{\egroup\gmv@edismath}}
```

doc- and shortvrb-compatibility

One of minor errors while TEXing doc.dtx was caused by my understanding of a 'shortverb' char: at my settings, in the math mode an active 'shortverb' char expands to itself's 'other' version thanks to `\string`. doc/shortvrb's concept is different, there a 'shortverb' char should work as usual in the math mode. So let it may be as they wish:

```
\old@MakeShortVerb \def\old@MakeShortVerb#1{%
  \@xa\ifx\csname␣cc\string#1\endcsname\relax
  \@shortvrbinfo{Made␣}{#1}\@shortvrbdef
  \add@special{#1}%
  \AddtoPrivateOthers#1% a macro to be really defined in gmdoc.
  \@xa
  \xdef\csname␣cc\string#1\endcsname{\the\catcode`#1}%
  \begingroup
  \catcode`\~\active␣\lccode`\~`#1%
  \lowercase{%
    \global\@xa\let\csname␣ac\string#1\endcsname~%
    \@xa\gdef\@xa~\@xa{%
      \@shortvrbdef~}}%
  \endgroup
  \global\catcode`#1\active
 \else
 \@shortvrbinfo\@empty{#1␣already}{\@empty\verb(*)}%
```

```
\fi}
```

\OldMakeShortVerb
```
\def\OldMakeShortVerb{\begingroup
  \let\@MakeShortVerb=\old@MakeShortVerb
  \@ifstar{\eg@MakeShortVerbStar}{\eg@MakeShortVerb}}
```

\eg@MakeShortVerbStar
```
\def\eg@MakeShortVerbStar#1{\MakeShortVerb*#1\endgroup}
```

\eg@MakeShortVerb
```
\def\eg@MakeShortVerb#1{\MakeShortVerb#1\endgroup}
```

Grey visible spaces

In August 2008 Will Robertson suggested grey spaces for gmdoc. I added a respective option to that package but I like the grey spaces so much that I want provide them for any verbatim environments, so I bring the definition here. The declaration, if put in the preamble, postpones redefinition of `\visiblespace` till `\begin{document}` to recognize possible redefinition of it when xltxtra is loaded.

```
\let\gmd@preambleABD\AtBeginDocument
\AtBeginDocument{\let\gmd@preambleABD\firstofone}
```

```
\RequirePackage{xcolor}% for \providecolor
```

\VisSpacesGrey
```
\def\VisSpacesGrey{%
  \providecolor{visspacesgrey}{gray}{0.5}%
  \gmd@preambleABD{%
    \edef\visiblespace{%
      \hbox{\@nx\textcolor{visspacesgrey}%
        {\@xa\unexpanded\@xa{\visiblespace}}}}%
  }}
```

```
\endinput% for the Tradition.
```

f. The gmeometric Package[1]

Written by Grzegorz Murzynowski,
natror at o2 dot pl


```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{gmeometric}
      [2008/11/22 v0.73 to allow the `geometry' macro in the
           document (GM)]
```

Introduction, usage

This package allows you to use the `\geometry` macro, provided by the geometry v3.2 and v4.1 by Hideo Umeki, anywhere in a document: originally it's claused `\@onlypreamble` and the main work of gmeometric is to change that.

Note it's rather queer to change the page layout *inside* a document and it should be considered as drugs or alcohol: it's O.K. only if you *really* know what you're doing.

In order to work properly, the macro should launch the `\clearpage` or the `\cleardoublepage` to 'commit' the changes. So, the unstarred version trigges the first while the starred the latter. If that doesn't work quite as expected, try to precede or succede it with `\onecolumn` or `\twocolumn`.

It's important that `\clear(double)page` launched by `\geometry` not to be a no-op, i.e., `\clear(double)page` immediately preceding `\geometry` (nothing is printed in between) discards the 'commitment'.

You may use gmeometric just like geometry i.e., to specify the layout as the package options: they shall be passed to geometry.

This package also checks if the engine is XeTeX and sets the proper driver if so. Probably it's redundant since decent XeTeX packages provide their geometry.cfg file that does that.

The remarks about installation and compiling of the documentation are analogous to those in the chapter gmdoc.sty and therefore ommitted.

Contents of the gmeometric.zip archive

The distribution of the gmeometric package consists of the following four files.

gmeometric.sty
README
gmeometric.pdf

[1] This file has version number v0.73 dated 2008/11/22.

gmeometric.tds.zip

Usage

The main use of this package is to allow the \geometry command also inside the document (originally it's \@onlypreamble). To make \geometry work properly is quite a different business. It may be advisable to 'commit' the layout changes with \newpage, \clearpage, or \cleardoublepage and maybe \one/twocolumn.

Some layout commands should be put before \one/twocolumn and other after it. An example:

```
\thispagestyle{empty}
\advance\textheight 3.4cm\relax
\onecolumn
\newpage
\advance\footskip-1.7cm
\geometry{hmargin=1.2cm,vmargin=1cm}
\clearpage
```

And another:

```
\newpage
\geometry{bottom=3.6cm}
```

In some cases it doesn't work perfectly anyway. Well, the (LPPL) license warns about it.

The code

```
\RequirePackage{gmutils}[2008/11/21]% this package defines the storing and restoring commands.
```

Redefine \@onlypreamble, add storing to BeginDocument.

\gme@tobestored
```
\newcommand*\gme@tobestored{{% this list consists of the cs es relaxed at begin document by geometry (the only \AtBeginDocument in geometry v4.1).
    \Gm@cnth␣\Gm@cntv␣\c@Gm@tempcnt␣\Gm@bindingoffset␣\Gm@wd@mp
    \Gm@odd@mp␣\Gm@even@mp␣\Gm@orgpw␣\Gm@orgph␣\Gm@orgw␣\Gm@orgh
    \Gm@dimlist}}
\@xa\AtBeginDocument\@xa{\@xa\StoreMacros\gme@tobestored}
\StoreMacro\@onlypreamble
\let\@onlypreamble\@gobble
```

To make it work properly in XeTeX:

\pdfoutput
```
\@ifXeTeX{%
  \@ifundefined{pdfoutput}{\newcount\pdfoutput}{}%
  \PassOptionsToPackage{dvipdfm}{geometry}%
}{}
\RequirePackageWithOptions{geometry}
```

Restore \@onlypreamble:

```
\RestoreMacro\@onlypreamble
```

Hypothesis: \ifx...\@undefined fails in the document because something made \csname␣Gm@lines\endcsname. So we change the test to decent. And i think I've

found the guilty: \@ifundefined in \Gm@showparams. So I change it to the more elegant \ifx\@undefined.

\Gm@showparams

```
\def\Gm@showparams{%
  --------------------␣Geometry␣parameters^^J%
  \ifGm@pass
  'pass'␣is␣specified!!␣(disables␣the␣geometry␣layouter)^^J%
  \else
  paper:␣\ifx\Gm@paper\@undefined␣class␣default\else\Gm@paper%
       \fi^^J%
  \Gm@checkbool{landscape}%
  twocolumn:␣\if@twocolumn\Gm@true\else--\fi^^J%
  twoside:␣\if@twoside\Gm@true\else--\fi^^J%
  asymmetric:␣\if@mparswitch␣--\else\if@twoside\Gm@true\else␣--%
       \fi\fi^^J%
  h-parts:␣\Gm@lmargin,␣\Gm@width,␣\Gm@rmargin%
  \ifnum\Gm@cnth=\z@\space(default)\fi^^J%
  v-parts:␣\Gm@tmargin,␣\Gm@height,␣\Gm@bmargin%
  \ifnum\Gm@cntv=\z@\space(default)\fi^^J%
  hmarginratio:␣\ifnum\Gm@cnth<5␣\ifnum\Gm@cnth=3--\else%
    \Gm@hmarginratio\fi\else--\fi^^J%
  vmarginratio:␣\ifnum\Gm@cntv<5␣\ifnum\Gm@cntv=3--\else%
    \Gm@vmarginratio\fi\else--\fi^^J%
  lines:␣\ifx\Gm@lines\@undefined--\else\Gm@lines\fi^^J% here I (natror) fix the bug: it was \@ifundefined that of course was assigning % \relax to \Gm@lines and that resulted in an error when \geometry was used inside document.
  \Gm@checkbool{heightrounded}%
  bindingoffset:␣\the\Gm@bindingoffset^^J%
  truedimen:␣\ifx\Gm@truedimen\@empty␣--\else\Gm@true\fi^^J%
  \Gm@checkbool{includehead}%
  \Gm@checkbool{includefoot}%
  \Gm@checkbool{includemp}%
  driver:␣\Gm@driver^^J%
  \fi
  --------------------␣Page␣layout␣dimensions␣and␣switches^^J%
  \string\paperwidth\space\space\the\paperwidth^^J%
  \string\paperheight\space\the\paperheight^^J%
  \string\textwidth\space\space\the\textwidth^^J%
  \string\textheight\space\the\textheight^^J%
  \string\oddsidemargin\space\space\the\oddsidemargin^^J%
  \string\evensidemargin\space\the\evensidemargin^^J%
  \string\topmargin\space\space\the\topmargin^^J%
  \string\headheight\space\the\headheight^^J%
  \string\headsep\@spaces\the\headsep^^J%
  \string\footskip\space\space\space\the\footskip^^J%
  \string\marginparwidth\space\the\marginparwidth^^J%
  \string\marginparsep\space\space\space\the\marginparsep^^J%
  \string\columnsep\space\space\the\columnsep^^J%
  \string\skip\string\footins\space\space\the\skip\footins^^J%
  \string\hoffset\space\the\hoffset^^J%
  \string\voffset\space\the\voffset^^J%
  \string\mag\space\the\mag^^J%
```

```
  \if@twocolumn\string\@twocolumntrue\space\fi%
  \if@twoside\string\@twosidetrue\space\fi%
  \if@mparswitch\string\@mparswitchtrue\space\fi%
  \if@reversemargin\string\@reversemargintrue\space\fi^^J%
  (1in=72.27pt, 1cm=28.45pt)^^J%
  ----------------------}
```

Add restore to BeginDocument:

```
\@xa\AtBeginDocument\@xa{\@xa\RestoreMacros\gme@tobestored}

\endinput
```

g. The gmoldcomm Package[1]

November 22, 2008

This is a package for handling the old comments in LaTeX 2ε Source Files when LaTeXing them with the gmdoc package.

Written by Natror (Grzegorz Murzynowski) 2007/11/10.

It's a part of the gmdoc bundle and as such a subject to the LaTeX Project Public License.

Scan css and put them in tt. If at beginning of line, precede them with %. Obey lines in the commentary.

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{gmoldcomm}
          [2007/11/10 v0.99 LaTeX old comments handling (GM)]
```

oldcomments

```
\newenvironment{oldcomments}{%
  \catcode`\\=\active
  \let\do\@makeother
  \do\$% Not only css but also special chars occur in the old comments.
  \do\|\do\#\do\{\do\}\do\^\do\_\do\&%
  \gmoc@defbslash
  \obeylines
  \StoreMacro\finish@macroscan
```

\finish@macroscan

```
  \def\finish@macroscan{%
    \@xa\gmd@ifinmeaning\macro@pname\of\gmoc@notprinted%
    {}{{\tt\ifvmode\%\fi\bslash\macro@pname}}%
    \gmoc@checkenv
  }%
}{}

{\escapechar\m@ne
\xdef\gmoc@notprinted{\string\begin,\string\end}}
```

\gmoc@maccname \gmoc@ocname

```
\def\gmoc@maccname{macrocode}
\def\gmoc@ocname{oldcomments}

\foone{%
  \catcode`\[=1 \catcode`\]=2
  \catcode`\{=12 \catcode`\}=12 }
```

\gmoc@checkenv

```
[\def\gmoc@checkenv[%
  \@ifnextchar{%
    [\gmoc@checkenvinn][]]%
```

\gmoc@checkenvinn \gmoc@resa

```
\def\gmoc@checkenvinn{#1}[%
  \def\gmoc@resa[#1]%
  \ifx\gmoc@resa\gmoc@maccname
    \def\next[%
      \begingroup
```

[1] This file has version number v0.99 dated 2007/11/10.

```
\@currenvir
        \def\@currenvir[macrocode]%
        \RestoreMacro\finish@macroscan
        \catcode`\\=\z@
        \catcode`\{=1 \catcode`\}=2
        \macrocode]%
    \else
      \ifx\gmoc@resa\gmoc@ocname
        \def\next[\end[oldcomments]]%
      \else
        \def\next[%
          \{#1\}%
        ]%
      \fi
    \fi
    \next]%
]

\foone{%
  \catcode`\/=\z@
  \catcode`\\=\active}
\gmoc@defbslash
{/def/gmoc@defbslash{%
    /let\/scan@macro}}

\task
\def\task#1#2{}

\endinput
```

Change History

gmdoc v0.96
  General:
    CheckSum 2395, a-0
gmdoc v0.98d
  \ChangesStart:
    An entry to show the change history works: watch and admire. Some sixty \changes entries irrelevant for the users-other-than-myself are hidden due to the trick described on p. 83. a-5990
gmdoc v0.99a
  General:
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gmdoc v0.99b
  General:
    Thanks to the \edverbs declaration in the class, displayed shortverbs simplified; Emacs mode changed to doctex. Author's true name more exposed, a-7743
gmdoc v0.99c
  General:
    A bug fixed in \DocInput and all \expandafters changed to \@xa and \noexpands to \@nx, a-7743
    The TEX-related logos now are declared with \DeclareLogo provided in gmutils, a-7743
  \DocInput:
    added ensuring the code delimiter to be the same at the end as at the beginning, a-2410
  \gmd@bslashEOL:
    a bug fix: redefinition of it left solely to \QueerEOL, a-3415
gmdoc v0.99d
  General:
    \@namelet renamed to \n@melet to solve a conflict with the beamer class (in gmutils at first), a-7743
    \afterfi & pals made two-argument, a-7743
  \FileInfo:
    added, a-6850
gmdoc v0.99e
  General:
    a bug fixed in \DocInput and \IndexInput, a-7743
    CheckSum 4574, a-0
gmdoc v0.99g
  General:
    CheckSum 5229, a-0
    The bundle goes XETEX. The TEX-related logos now are moved to gmutils. ^^A becomes more comment-like thanks to re\catcode'ing. Automatic detection of definitions implemented, a-7743
  \gmd@ifinmeaning:
    made more elegant: \if changed to \ifx made four parameters and not expanding to an open \iftrue/false. Also renamed from \@ifismember, a-3639
  hyperref:
    added bypass of encoding for loading url, a-2127
  \inverb:
    added, a-7032
  \OldDocInput:
    obsolete redefinition of the macro environment removed, a-7589
gmdoc v0.99h
  General:
    Fixed behaviour of sectioning commands (optional two heading skip check) of mwcls/gmutils and respective macro added in gmdocc. I made a tds archive, a-7743
gmdoc v0.99i
  General:
    A "feature not bug" fix: thanks to \everyeof the \(No)EOF is now not necessary at the end of \DocInput file., a-7743
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  General:
    CheckSum 5266, a-0
  quotation:
    Improved behaviour of redefined quotation to be the original if used by another environment., a-6999

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  General:
    CheckSum 5261, a-0
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    removed some lines testing if XeTeX colliding with tikz and most probably obsolete, a-2145
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  \CodeSpacesGrey:
    added due to Will Robertson's suggestion, a-2602
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  \gmd@FIrescan:
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  \SelfInclude:
    Made a shorthand for \Docinclude\jobname instead of repeating 99% of \DocInclude's code, a-6590
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    renamed from \VerbMacrocodes, a-5177
  ^^M:
    there was \let^^M but \QueerEOL is better: it also redefines \^^M, a-2393
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    CheckSum 5356, a-0
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  \gmd@bslashEOL:
    also \StraightEOL with countalllines package option lets \^^M to it, a-3415
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  theglossary:
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  \gmd@nlperc:
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    added, a-3086
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gmdoc v0.99o
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enumargs:
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General:
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\EOFMark:
The gmeometric option made obsolete and the gmeometric package is loaded always, for XeTeX-compatibility. And the class options go xkeyval., b-444
gmdocc v0.77
General:
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\EOFMark:
Bug fix of sectioning commands in mwcls and the default font encoding for TeXing old way changed from QX to T1 because of the 'corrupted NTFS tables' error, b-444
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General:
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gmdocc v0.79
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gmeometric v0.69
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General:
a TDS-compliant zip archive made, f-407
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gmeometric v0.72
General:
2008/08/06 only the way of documenting changes so I don't increase the version number, f-407
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\gme@tobestored:
two cs es added to the list for compatibility with geometry v4.1, f-183
gmutils v0.74
\@begnamedgroup@ifcs:
The catcodes of \begin and \end argument(s) don't have to agree strictly anymore: an environment is properly closed if the \begin's and \end's arguments result in the same \csname, c-1069
General:
Added macros to make sectioning commands of mwcls and standard classes compatible. Now my sectionings allow two optionals in

both worlds and with mwcls if there's only one optional, it's the title to toc and running head not just to the latter, c-4248

gmutils v0.75

`\@ifnextcat`:

`\let` for `#1` changed to `\def` to allow things like `\noexpand~ `, c-862

`\@ifnextif`:

`\let` for `#1` changed to `\def` to allow things like `\noexpand~`, c-898

`\@ifnif`:

added, c-923

gmutils v0.76

General:

A 'fixing' of `\dots` was rolled back since it came out they were O.K. and that was the QX encoding that prints them very tight, c-4248

`\freeze@actives`:

added, c-3266

gmutils v0.77

General:

`\afterfi` & pals made two-argument as the Marcin Woliński's analogoi are. At this occasion some redundant macros of that family are deleted, c-4248

gmutils v0.78

General:

`\@namelet` renamed to `\n@melet` to solve a conflict with the beamer class. The package contents regrouped, c-4248

gmutils v0.79

`\not@onlypreamble`:

All the actions are done in a group and therefore `\xdef` used instead of `\edef` because this command has to use `\do` (which is contained in the `\@preamblecmds` list) and `\not@onlypreamble` itself should be able to be let to `\do`, c-1663

gmutils v0.80

General:

CheckSum 1689, c-0

`\hfillneg`:

added, c-3185

gmutils v0.81

`\dekfraccslash`:

moved here from pmlectionis.cls, c-3445

`\ifSecondClass`:

moved here from pmlectionis.cls, c-3417

gmutils v0.82

`\ikern`:

added, c-3453

gmutils v0.83

`\~`:

postponed to `\begin{document}` to avoid overwriting by a text command and made sensible to a subsequent `/`, c-3138

gmutils v0.84

General:

CheckSum 2684, c-0

gmutils v0.85

General:

CheckSum 2795, c-0

fixed behaviour of too clever headings with gmdoc by adding an `\ifdim` test, c-4248

gmutils v0.86

`\texttilde`:

renamed from `\~` since the latter is one of LaTeX accents, c-3146

gmutils v0.87

General:

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the package goes ε-TeX even more, making use of `\ifdefined` and the code using UTF-8 chars is wrapped in a XeTeX-condition, c-4248

gmutils v0.88

General:

CheckSum 4040, c-0

`\RestoreEnvironment`:

added, c-1602

`\storedcsname`:

added, c-1593

`\StoreEnvironment`:

added, c-1598

gmutils v0.89

General:

removed obsolete adjustment of pgf for XeTeX, c-4248

gmutils v0.90

General:

CheckSum 4035, c-0

`\XeTeXthree`:

adjusted to the redefinition of `\verb` in xltxtra 2008/07/29, c-2489

gmutils v0.91

General:

CheckSum 4055, c-0

removed `\jobnamewoe` since `\jobname` is always without extension. `\xiispace` forked to `\visiblespace` `\let` to `\xxt@visiblespace` of xltxtra if available. The documentation driver integrated with the .sty file, c-4248

gmutils v0.92

`\@checkend`:

shortened thanks to `\@ifenvir`, c-1101

`\@gif`:

added redefinition so that now switches defined with it are `\protected` so they won't expand to a further expanding or unbalanced `\iftrue/false` in an `\edef`, c-281

`\@ifenvir`:
added, c-1093

General:
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gmutils v0.93

`\@nameedef`:
added, c-229

General:
A couple of `\DeclareRobustCommand*` changed to `\pdef`, c-4248
CheckSum 4140, c-0
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The numerical macros commented out as obsolete and never really used, c-4248

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added, c-755

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`\gmu@RPfor`:
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`\litshape`:
copied here from E. Szarzyński's *The Letters*, c-4108

`\lsl`:
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`\nocite`:
a bug fixed: with natbib an 'extra }' error. Now it fixes only the standard version of `\nocite`, c-1701

`\pdef`:
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gmutils v0.94

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General:
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`\afterfifi`:
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`\dekfracc`:
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`\gm@ifundefined`:
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made robust to unbalanced `\if`s and `\fi`s the same way as LATEX's `\@ifundefined` (after a heavy debug :-), c-412

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`\ldate`:
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`\resizegraphics`:
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gmutils v0.95

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`\gm@testdefined`:
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`\glyphname`:
moved here from my private document class, c-3792

`\gmathfurther`:

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