

# The **etoc** package

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## Abstract

The **etoc** package gives to the user complete control on how the entries of the table of contents should be constituted from the *name*, *number*, and *page number* of each sectioning unit. This goes via the definition of *line styles* for each sectioning level used in the document. The package provides its own custom line styles as an example. The simplest usage though will be to use the layout facilities of packages dealing with list environments.

The `\tableofcontents` command may be used arbitrarily many times and it has a variant `\localtableofcontents` which prints tables of contents ‘local’ to the current surrounding document unit. An extension of the `\label/\ref` syntax allows to reproduce (with another layout) a TOC defined somewhere else in the document.

The formatting inherited (and possibly customized by other packages) from the document class may also be used in *compatibility mode*. Regarding the *global toc display*, **etoc** provides pre-defined styles based on a multi-column format, optionally with a frame or a ruled title.

As the assignment of levels to the sectioning units can be changed at any time, **etoc** can be used in a quite general manner to also create custom “lists of”, additionally to the tables of contents related to the document sectioning units. No auxiliary file is used apart from the usual `.toc` file.

## Foreword

Popular packages dealing with TOCs include `tocloft`, `titletoc` and `minitoc`. Why another one? well, initially I started **etoc** for my own use, and only later found out about the above mentioned packages ...

As is well explained in the `tocloft` package documentation, the standard L<sup>A</sup>T<sub>E</sub>X layout for the Table of Contents is buried in the class definitions. In particular, most of the lengths therein are hardcoded, and the only way for the user to change them is to recopy the class definitions into the document and then change them to obtain what is desired (within suitable `\makeatletter` and `\makeatother`). The more reasonable alternative is to use a dedicated package such as `tocloft` or to use another flexible document class.

However, although now things are hopefully not hard-coded, one still has to go through the package or class interface. This means one has to memorize a (possibly large) number of macros which will serve only to this task, and one will always be constrained to customizing one initially given layout.

The spirit of **etoc** is something else. The user will deal with the *name*, the *number* and the *page number* corresponding to each document sectional division (and found in a line of the `.toc` file) in a completely arbitrary manner: they are made available via the `\etocname`, `\etocnumber`, and `\etocpage` commands.

**etoc** is compatible with the `article`, `book`, `report`, `scrartcl`, `scrbook`, `scrreprt` and `memoir` classes.

## CONTENTS

### Change history

v1.02 [2012/11/18]

initial version

v1.04 [2012/11/24]

a (possibly local) table of contents can be labeled:

`\tableofcontents \label{toc:1}`

and reproduced elsewhere in the document (with a possibly completely different layout):

`\tableofcontents \ref{toc:1}`

v1.05 [2012/12/01]

`\localtableofcontents` replaces `\tableofcontents*` (for compatibility with the memoir class)

compatibility with KOMA-script and memoir document classes.

v1.06 [2012/12/07]

the standard macros `\@section` etc... are modified only during the calls to `\tableofcontents`; they can thus be customized as will by the user (with the help of a package like `tocloft`) and this will be taken into account by `etoc` for the TOCs typeset in compatibility mode.

v1.07 [2013/01/29]

new commands:

`\etocthenname`, `\etocthenumber`, `\etocthepage`, `\etoclink`,

`\etoccontentsline`, `\etoccontentsline*`

`\etocnopar`, `\etocaftercontentshook`

modified command: `\etocmulticolstyle`

new documentation section ‘surprising uses of `etoc`’ which explains how to do ‘lists of arbitrary things’, in addition to the tables of contents.

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## TABLE OF CONTENTS

### Part I. Overview

<b>Initial motivation: nested lists</b>	<b>1, p. 4</b>
Limitations intrinsic to the use of environments	1.1, p. 4
<b>Line styles and toc display style</b>	<b>2, p. 4</b>
<code>\etocsettocstyle</code> for the toc display	2.1, p. 5
<code>\etocsetstyle</code> for the line styles	2.2, p. 5
Compatibility mode	2.3, p. 5
<b>Arbitrarily many TOCs, and local ones too</b>	<b>3, p. 5</b>
Labeling and reusing elsewhere	3.1, p. 6
On manually adding layout commands to the <code>.toc</code> file	3.2, p. 6
Shuffling the levels with <code>\etocsetlevel</code>	3.3, p. 7
Local table of contents for this part	3.4, p. 7

The hyperref option <code>bookmarksdepth</code>	3.5, p. 8
<b>Surprising uses of <code>etoc</code></b>	<b>4, p. 9</b>
The TOC of TOCs	4.1, p. 9
Arbitrary “Lists Of...”	4.2, p. 10
A TOC with a fancy layout	4.3, p. 11

### Part II. Package commands for line styles

<b>The <code>\etocsetstyle</code> command</b>	<b>5, p. 13</b>
The <code>\etocname</code> and <code>\etocpage</code> commands	5.1, p. 13
The <code>\etocskipfirstprefix</code> command	5.2, p. 14
The <code>\etocnumber</code> command	5.3, p. 14
The <code>\etocifnumbered</code> switch.	
The <code>\etocthenname</code> , <code>\etocthenumber</code> , and <code>\etocthepage</code> commands	5.4, p. 15

## CONTENTS

The `\etoclink` command . . . 5.5, p. 15

The `\etocsetlevel` command . . .  
. . . . . 5.6, p. 16

This is a (pale) red subsection for illustrative  
purposes.

Am I also red? . . . . . 6, p. 17

A comparison . . . . . 7, p. 17

### Part III. Package commands for toc display styles

Specifying the toc display style . . .  
. . . . . 8, p. 21

The command `\etocruledstyle` . . .  
. . . . . 8.1, p. 21

The command `\etocmulticolstyle`  
. . . . . 8.2, p. 22

The command `\etoctocstyle`.

The command `\etocruled` . . . 8.3, p. 22

The commands `\etocframedstyle` and  
`\etocframed` . . . . . 8.4, p. 23

Headings, titles, `\etocinnertopsep` . .  
. . . . . 8.5, p. 23

The command `\etocsettocstyle` . .  
. . . . . 8.6, p. 23

The compatibility mode `\etocstandard-  
displaystyle` . . . . . 8.7, p. 24

Starred variants of the `\tableofcon-  
tents` etc... commands . . . 9, p. 24

Table of contents for this part . . .  
. . . . . 10, p. 25

Testing the compatibility mode . . .  
. . . . . 10.1, p. 25

A framed display . . . . . 10.2, p. 25

### Part IV. Using and customiz- ing `etoc`

Summary of the main style commands  
. . . . . 11, p. 27

Setting up local styles . . . 11.1, p. 27

Setting up toc display styles . . . . .  
. . . . . 11.2, p. 27

Displaying Table of Contents . . . . .  
. . . . . 11.3, p. 28

Labels and references . . . 11.4, p. 28

An example . . . . . 11.5, p. 28

Customizing `etoc` . . . . . 12, p. 30

Customizing the `etoc` pre-defined line  
styles . . . . . 12.1, p. 30

Customizing the toc display styles . .  
. . . . . 12.2, p. 31

### Part V. Tips

... and tricks . . . . . 13, p. 33

Hacking framed parboxes . . . 13.1, p. 33

Interverting the levels . . . 13.2, p. 33

All subsections of this document . . .  
. . . . . 13.3, p. 34

Compatibility with other packages . . .  
. . . . . 13.4, p. 35

T<sub>E</sub>Xnical matters . . . . . 13.5, p. 35

Errors and catastrophes . . . 13.6, p. 35

### Part VI. The code

Implementation . . . . . 14, p. 36

# Part I.

## Overview

### 1. Initial motivation: nested lists

The initial impetus was to feed nested list environments with the data consisting of the *name*, *number*, and *page number* as recorded in the `.toc` file.<sup>1</sup> For example, typesetting the line corresponding to the first sub-section in a given section would open a list environment which would be closed only when a section, chapter, or part line entry in the `.toc` file would be encountered. **etoc** allows to do this very easily and the opening and closing may be for example `\begin{enumerate}` and `\end{enumerate}` pairs, will all the customizing allowed by packages such as `enumitem`.

#### 1.1. Limitations intrinsic to the use of environments

There is a first limitation to this method: the `.toc` file may contain other commands, such as language changing commands, which do not expect to see their scope limited in this way inside a group ( $\LaTeX$ 's environments create groups). Therefore the package own line styles (illustrated by the main table of contents in this document) do not make use of environments to avoid that problem.

A second limitation is that one may nest at most 4 levels of `enumerate` environments, and 4 levels of `itemize` environment. I tried alternating them and did succeed to nest 6 levels (and not 8 alas . . . <sup>2</sup>). With `\etocnumber` as the optional parameter to `\item`: `\item[\etocnumber]` one may transform the itemize into an enumerated list... anyway, 4 levels of sectional divisions in a TOC are generally sufficient, and again using `enumerate` environments is only a possibility provided by **etoc**, it is by no means mandatory to use them in the line styles specifications.

We will give in this manual a simple-minded example of nested use of `enumerate` environments. More sophisticated examples would use more sophisticated `enumitem` options. One may say then that again the user has to memorize some customizing! indeed, but the syntax and option names to memorize are in no way related only to matters of tables of contents, hence an economy of use of the poor brain.

Still a different sort of example, less elementary and not making use at all of list-making environments, is built-in in **etoc** own "line styles". They are activated by the command `\etoclines`... and do come with their own set of customizing macros!

### 2. Line styles and toc display style

A distinction shall be made between the *line styles*, *i.e.* the way the name, number and page numbers are used at each level, and the *toc display style* (for lack of a better name) which tells how the title should be set, whether an entry in the `.toc` file should be made, whether

---

<sup>1</sup>I got started about this through reading this question on the  $\TeX$  Stackexchange site:  
[tex.stackexchange.com/questions/79682](https://tex.stackexchange.com/questions/79682)

<sup>2</sup>this is surely a well-known issue which I did not at all investigate any further.

### 3. Arbitrarily many TOCs, and local ones too

the contents should be typeset with multiple columns, etc... the latter is governed by the command `\etocsettocstyle` (or some higher-level commands) and the former by the command `\etocsetstyle`.

#### 2.1. `\etocsettocstyle` for the toc display

The low-level `\etocsettocstyle` command allows to decide what should be done before and after the line entries of the TOC are typeset, and in particular how the title should be printed. It has two arguments, the first one is executed before the TOC contents (typically it will print “Contents” and define suitable head-marks) and the second is executed after the TOC contents.

`etoc` provides four (customizable) higher level toc styles: `\etocmulticolstyle`, `\etoctocstyle`, `\etocruledstyle`, and `\etocframedstyle`. All use the `multicol` package with a default of two columns (single-column mode is of course allowed).

These commands must be followed either by `\tableofcontents` or `\localtableofcontents`.

#### 2.2. `\etocsetstyle` for the line styles

The command to inform `etoc` of what to do with `\etocname`, `\etocnumber`, and `\etocpage` is called `\etocsetstyle`. It has five mandatory arguments. The first one is the name of the sectional unit: a priori known names are `book`, `part`, `chapter`, `section`, `subsection`, `subsubsection`, `paragraph`, and `subparagraph`. The four other arguments say: 1) *what to do when this level is first encountered, down from a more general one*, then 2) & 3) (two arguments, a ‘prefix’ and a ‘contents’) *what to do when a new entry of that type is found*, and 4) *the last argument is the code to execute when a division unit of higher importance is again hit upon*.

#### 2.3. Compatibility mode

Both for the “line styles” and the “toc display style”, it is possible to switch into a compatibility mode which uses the defaults from the document class.<sup>3</sup> This is activated by:

```
\etocstandardlines % ‘line entries’ as without \usepackage{etoc}  
\etocstandarddisplaystyle % ‘toc display’ as without \usepackage{etoc}
```

This is the default at the start of the document, and adding `\usepackage{etoc}` should hopefully not change anything to the look of a previously existing document, under the `article`, `book`, `report`, `scrartcl`, `scrbook`, `scrreprt` and `memoir` classes.

### 3. Arbitrarily many TOCs, and local ones too

`etoc` allows arbitrarily many `\tableofcontents` commands in your document. The line styles and the toc display style may of course be changed in-between. Furthermore `\localtableofcontents` will print local tables of contents<sup>4</sup>: *i.e.* all sections and sub-units

<sup>3</sup>for the “toc display style” `etoc` checks if it knows the class, and if not defaults to the `article` class layout.

<sup>4</sup>Up to version 1.04 we called this `\tableofcontents*`, but for reasons of compatibility with the `memoir` class, we have decided to drop this usage.

### 3. Arbitrarily many TOCs, and local ones too

inside a given chapter, or all subsubsections and lower inside a given subsection, etc . . .

#### 3.1. Labeling and reusing elsewhere

**etoc** allows the labeling of a TOC with `\label{toc:A}` and will redisplay it elsewhere when told `\tableofcontents\ref{toc:A}`. The actual layout (title inclusive) used for the cloned TOC will be decided locally. The line styles and toc display style (including the title) will be the current ones and the current value of the `tocdepth` counter is obeyed. As an example here is the table of contents of Part IV:

I am from far away	
<b>11. Summary of the main style commands</b>	<b>27</b>
11.1. Setting up local styles . . . . .	27
11.2. Setting up toc display styles . . . . .	27
11.3. Displaying Table of Contents . . . . .	28
11.4. Labels and references . . . . .	28
11.5. An example . . . . .	28
<b>12. Customizing <b>etoc</b></b>	<b>30</b>
12.1. Customizing the <b>etoc</b> pre-defined line styles . . . . .	30
12.2. Customizing the toc display styles . . . . .	31

We actually did something like:

```
\tableofcontents \label{toc:d}\ref{toc:c}
```

Hence the present location can itself now be referred to via `\ref{toc:d}`: it gives the id of this TOC<sup>5</sup> in the sequence of document TOCs, and will be a link if package `hyperref` is used.

However one should not use elsewhere `\tableofcontents \ref{toc:d}`. Due to the way **etoc** implements the cloning, the doubly cloned TOC will be typeset as a full table of contents. So to clone again, one should use the original: `\tableofcontents \ref{toc:c}`.

#### 3.2. On manually adding layout commands to the .toc file

When displaying in that way many tables of contents in the same document one should of course beware of the impact of adding manually things to the `.toc` file. For example, inserting

```
\addtocontents{toc}{\string\clearpage}
```

just before a `\part` to fix the problem when some part entry (in the table of contents) is isolated at the bottom of one page, will cause problems with multiple TOCs: this `\clearpage` will be executed by **etoc** each time a `\tableofcontents` or `\localtableofcontents` command is encountered! The more prudent thing is to have issued rather:

<sup>5</sup>*i.e* 3, there was an invisible TOC with id 2 at the beginning of this part.

### 3. Arbitrarily many TOCs, and local ones too

`\addtocontents{toc}{\string\myclearpage}`,  
to have a `\let\myclearpage\relax` at the top level of the document and to use where needed something like:

```
\let\myclearpage\clearpage
\tableofcontents
\let\myclearpage\relax
```

The memoir class has the command `\settocdepth` which writes a `\changetocdepth` command inside the `.toc` file. This will impact the typesetting by **etoc** of *all* tables of contents, with possibly unexpected results: imagine the document has `\settocdepth{chapter}` at some point to avoid having the sections from subsequent chapters be listed in the main table of contents. Then a local table of contents in one of these chapters will print a title but will be without any entry. A solution is to do `\begin{group} \renewcommand*{\changetocdepth}[1]{} \localtableofcontents \end{group}`, and to set the desired level for the local table of contents with the other memoir command `\maxtocdepth`.<sup>6</sup>

#### 3.3. Shuffling the levels with `\etocsetlevel`

The intrinsic levels manipulated by **etoc** are numeric: from -2 (which corresponds to book in the memoir class) down to 5 (subparagraph). But the assignment of a numeric level to a given name can be modified at any time with the command `\etocsetlevel{<level_name>}{<n>}`. In conjunction with the use of the L<sup>A</sup>T<sub>E</sub>X `tocdepth` counter, this has powerful applications: `<level_name>` does not have to coincide with an actual document sectioning command, and **etoc** can be used to print arbitrary “lists of things”, using no other auxiliary file than the `.toc` file. This is explained further in the section 4.

#### 3.4. Local table of contents for this part

Immediately after the line in the source file starting with the first `\part` we wrote:

```
\setcounter{tocdepth}{-3}
\localtableofcontents \label{toc:partone}
```

The `tocdepth` being set to -3, nothing at all was typeset in the page (**etoc** cancels printing even the heading of the TOC if the `tocdepth` is -2 or less, except for the memoir class for which it needs to be -3 or less). We can then display here this TOC with:

```
\setcounter{tocdepth}{3}
\tableofcontents \ref{toc:partone}
```

---

<sup>6</sup>The memoir class allows multiple calls to the `\tableofcontents` command, so these issues already arise there, independently of **etoc**, see page 170 of the memoir manual.

### 3. Arbitrarily many TOCs, and local ones too

Contents of Part One	
1	Initial motivation: nested lists 4
1.1	Limitations intrinsic to the use of environments 4
2	Line styles and toc display style 4
2.1	<code>\etocsettocstyle</code> for the toc display . . . . . 5
2.2	<code>\etocsetstyle</code> for the line styles . . . . . 5
2.3	Compatibility mode . . . . . 5
3	Arbitrarily many TOCs, and local ones too 5
3.1	Labeling and reusing elsewhere . . . . . 6
3.2	On manually adding layout commands to the .toc file . . . . . 6
3.3	Shuffling the levels with <code>\etocsetlevel</code> . . . . 7
3.4	Local table of contents for this part . . . . . 7
3.5	The hyperref option <i>bookmarksdepth</i> . . . . . 8
4	Surprising uses of <i>etoc</i> 9
4.1	The TOC of TOCs . . . . . 9
4.2	Arbitrary “Lists Of...” . . . . . 10
4.3	A TOC with a fancy layout . . . . . 11

The actual design is not pre-built in *etoc*; it uses the *etoc* ‘framed’ style with a background color and a dummy empty title, the actual title having been put inside the frame as part of the *<start>* code of the section ‘line style’. The frame borders have been set to have the same color as the one which serves as background for the entire thing. This design (with other colors) is in use also for [this other toc](#), and the coding used is to be found at its location.

#### 3.5. The hyperref option *bookmarksdepth*

When modifying the counter *tocdepth* for the purposes of multiple uses of `\tableofcontents` or `\localtableofcontents`, one should consider that package *hyperref* by default takes into account the *current* value of the *tocdepth* counter to decide whether the final pdf output will contain a bookmark corresponding to the used sectioning command. Thus, one often will have to reset *tocdepth* to its previous value immediately after the display of the table of contents.

Or, there is the *bookmarksdepth=n* option of package *hyperref*, with *n* the desired document bookmarks depth, which can be numeric or the name of a level known to *hyperref*. The present document passed *bookmarksdepth=3* as option to *hyperref*, so as to not have to reset *tocdepth* each time its value was changed.



## 4. Surprising uses of **etoc**

### 4.1. The TOC of TOCs

Here is the numbered and linked list of all tables of contents which are displayed within this document: [1](#), [2](#), [3](#), [4](#), [5](#), [6](#), [7](#), [8](#), [9](#), [10](#), [11](#), [12](#). And to obtain it here we just wrote:<sup>7</sup>

```
Here is the numbered and linked list of all
tables of contents which are displayed within
this document: \tableofcontents.
```

The preparatory work was the following. First, we defined a counter `visibletoc` whose vocation is to get incremented at each displayed toc. **etoc** has its own private counter but it counts all TOCs, even those not displayed because the `tocdepth` value was `-2` or `-3`.

We could have added manually `\refstepcounter{visibletoc}` and `\label` commands at all suitable locations in the document source, and we would then have used here `\ref` commands, but this imposes heavy manual editing of the source.

There is a much better way: there is a hook `\etocaftertitlehook` and we told it to increment the `visibletoc` counter and to write a line to the `.toc` file, in a manner analogous to what sectioning commands such as `chapter`, `section`, or `subsection` do. As **etoc** increments its own private counter even before typesetting the title of a table of contents, this provides (most of the time) a better link destination than any counter manipulated from inside `\etocaftertitlehook` (for which the link would target the area just after the title). So, rather than including `\refstepcounter{visibletoc}` inside `\etocaftertitlehook`, we just put there `\stepcounter{visibletoc}` followed by the package command `\etoccontentsline{<level_name>}{<name>}`. This command has the same effect as:

```
\addcontentsline{toc}{<level_name>}{<name>}
```

but its usefulness is to circumvent the automatic creation of bookmarks by the `hyperref` package, as they don't make much sense here (and elicit a complaint of `hyperref` that the bookmark level is 'unknown').

The package provides a starred variant `\etoccontentsline*`, which will allow the creation of bookmarks but has a third mandatory argument which is the level to be used by these bookmarks.

Finally, the preamble of the document did `\etocsetlevel{visibletoc}{6}`. The level 6 (or anything with a higher number) is ignored, even if `tocdepth` has value 10 for example; this is independently of whether **etoc** uses the document class default line styles or its own line styles, or the ones defined by the user with the `\etocsetstyle` command. So there is no need to worry that something could go wrong.

Then, only here we have set `\etocsetlevel{visibletoc}{0}`. And to display only this kind of entries we assign temporarily to `part` and `chapter` level 1 (or anything higher than zero) and set `tocdepth` to the value 0. We also did `\etocsetstyle{visibletoc}{\etocskipfirstprefix}{, }{\etocname}{}` which defines an inline display with the comma as separator. Finally, as **etoc** issues `\par` automatically by default just before typesetting a table of contents, we had to use the command `\etocnopar` to turn off this behavior.

Here are the implementation details:

. . . in the preamble:

---

<sup>7</sup>click the '3' from the list to confirm that this is indeed the third visible table of contents of this document...

#### 4. Surprising uses of **etoc**

```
\newcounter{visibletoc}
\renewcommand{\etocaftertitlehook}
  {\stepcounter{visibletoc}\etoccontentsline{visibletoc}{\thevisibletoc}}
\etocsetlevel{visibletoc}{6}
. . .
\begin{document}
. . . document body
\subsection{Surprising uses of etoc}
\begingroup
  \etocnopar
  \etocsetlevel{part}{1}
  \etocsetlevel{chapter}{1}
  \etocsetlevel{visibletoc}{0}
  \etocsetstyle{visibletoc}
    {\etocskipfirstprefix}{, }{\color{niceone}\etocname}}{}
  \etocsettocstyle{}{} % don't set any title, rules or frame or multicol!
  \setcounter{tocdepth}{0} % display only the 'visibletoc' entries from .toc
```

Here is the numbered and linked list of all tables of contents which are displayed within this document: `\tableofcontents`.

```
\endgroup
```

After `\etocsetstyle{visibletoc}...`, all future TOCs (not in compatibility mode) will use the defined style for level 0 (which is normally the level for chapters). To keep these changes strictly local the simplest manner is to put everything inside a group.

Subsection 13.2 gives another use of the shuffling of levels.

#### 4.2. Arbitrary “Lists Of...”

This idea of interverting the levels is very powerful and allows to let **etoc** display lists of arbitrary things contained in the document. All of that still using nothing else than the `.toc` file! Example: imagine a document with dozens of exercises, perhaps defined as `\newtheorem{exercise}{}[section]`. Let us explain how to instruct **etoc** to display an hyperlinked list of all these exercises. For this we put in the preamble:

```
\newtheorem{exerci}{}[section]
% the exercise number will be recoverable with \etocname: v-----v
\newcommand*{\exercisetotoc}{\etoccontentsline{exercise}{\theexerci}}
\newenvironment{exercise}{\begin{exerci}\exercisetotoc}{\end{exerci}}
\etocsetlevel{exercise}{6}
```

The above was motivated by question 94766 on the T<sub>E</sub>X-StackExchange site. The counter `exerci` is already incremented by the `exerci` theorem environment, and provides the correct destination for the link added by package `hyperref`. The command `\exercisetotoc` adds for each exercise a line to the `.toc` file, corresponding to a fictitious document unit with name ‘`exercise`’. A four-column list, including the sections, can then be typeset with the following code:

```
\begingroup
  \setcounter{tocdepth}{2} % section is at level 1
  \etocsetlevel{exercise}{2}
  \etocsetlevel{chapter}{3} % no chapters
```

#### 4. Surprising uses of **etoc**

```
\etocsetlevel{subsection}{3} % no subsections
\etocsetlevel{part}{3}      % no parts
\etocsetstyle{exercise}{}{} % \etocname = exercise number
  {\noindent\etocname\strut\leaders\etoclineleaders\hfill\etocpage\par}
  {\pagebreak[2]\vskip\baselineskip}
\etocsetstyle{section}{}{}
  {\noindent\strut{\bfseries\large\etocnumber\hskip.5em\etocname}\par}
  {\nopagebreak[3]}{}
\etocruledstyle[4]{\Large\bfseries List of the exercises}
\setlength{\columnseprule}{.4pt}
\tableofcontents
\endgroup
```

We used `\etoccontentsline` and not `\addcontentsline{toc}{...}{...}` as we didn't want to have bookmark creation done by `hyperref`. To allow creation of bookmarks at the specific level  $\langle n \rangle$ , one can use (here with  $\langle n \rangle = 2$ ):

```
\newcommand{\exercisetotoc}{\etoccontentsline*{exercise}{\theexerci}{2}}
```

In the above, recall that  $\text{\LaTeX}$  counters are global. The current `tocdepth` value is 2, and if not reset it will prevent `hyperref` to assign bookmarks to sub-subsections (level 3). The global `hyperref` option `bookmarksdepth` can be used to avoid having to systematically reset `tocdepth` after having changed it.

#### 4.3. A TOC with a fancy layout

Another question (numbered 61297) on the  $\text{\TeX}$  StackExchange site was about using  $\text{\LaTeX}$  to obtain a table of contents where the sections from a given chapter would be represented by a number range (like 18–22 for a given chapter, 42–49 for another one ... of course to be inserted automatically in the TOC). The next page is the result of my effort at using **etoc** for this problem. How this was done will be found on the above cited site.

This is not an image inclusion, the TOC is produced from its original `tex` source inserted in this document after replacement of `part`, `chapter` or `section` with `dummpart`, `dummychapter` and `dummysection` (and there is also a dummy page count). We copied the line styles used in the original and displayed the table of contents following:

```
\etocsetlevel{dummpart}{-1} \etocsetlevel{part}{2}
\etocsetlevel{dummychapter}{0} \etocsetlevel{chapter}{2}
\etocsetlevel{dummysection}{1} \etocsetlevel{section}{2}
\setcounter{tocdepth}{1}
```

## TABLE OF CONTENTS

---

### PART I

				SECTIONS.	PAGE.
Introductory	...	...	...	1—8	5
				<b>Concord.</b>	
<b>LESSON.</b>					
1.	Concord of Subject and Verb	...	...	9—17	7
2.	Concord of Substantive and Adjective	...	...	18—22	9
	Concord of Relative and its Antecedent	...	...	23—25	

### PART II

#### Government.

3.	The Accusative Case	...	...	...	17
	General uses	...	...	26—30	
	Particular uses	...	...	31—37	
4.	Verbs governing two Accusatives	...	...	38—41	23
5.	The Causal	...	...	42—49	25
6.	The Instrumental Case	...	...	...	27
	General uses	...	...	50—54	
	Particular uses	...	...	55—59	
7.	The Dative Case	...	...	...	33
	General uses	...	...	60—65	
	Particular uses	...	...	66—71	
8.	The Ablative Case	...	...	...	39
	General uses	...	...	72—75	
	Particular uses	...	...	76—86	
9.	The Locative Case	...	...	...	45
	General uses	...	...	87—92	
	Particular uses	...	...	93—100	

# Part II.

## Package commands for line styles

### Contents of this second part

#### 5 The `\etocsetstyle` command (page 13)

5.1 The `\etocname` and `\etocpage` commands (p. 13)

5.2 The `\etocskipfirstprefix` command (p. 14)

5.3 The `\etocnumber` command (p. 14)

*The `\etocifnumbered` switch.*

5.4 The `\etocthenname`, `\etocthenumber`, and `\etocthepage` commands (p. 15)

5.5 The `\etoclink` command (p. 15)

5.6 The `\etocsetlevel` command (p. 16)

*This is a (pale) red subsection for illustrative purposes.*

#### 6 Am I also red? (page 17)

#### 7 A comparison (page 17)

## 5. The `\etocsetstyle` command

### 5.1. The `\etocname` and `\etocpage` commands

Let us explain how `etoc` was used to produce the table of contents displayed at the beginning of this second part. This is a local table of contents, and we used the command `\localtableofcontents`.

We shall distinguish between the *line styles* and the *toc display style*. The line styles were (essentially) obtained in the following manner:<sup>8</sup>

```
\etocsetstyle{section}
{\begin{enumerate}}
{\normalsize\bfseries\rmfamily\item}
{\etocname (page \etocpage)}
{\end{enumerate}}
```

```
\etocsetstyle{subsection}
{\begin{enumerate}}
{\normalfont\item}
{\etocname (p.~\etocpage)}
```

---

<sup>8</sup>the present document has `\renewcommand{\familydefault}{\sfdefault}` in its preamble, hence `\normalfont` switches to the sans typeface; so in the section line-style, I wrote `\rmfamily` instead.

### 5. The `\etocsetstyle` command

```
{\end{enumerate}}

\etocsetstyle{subsubsection}
{\par\nobreak\begingroup\normalfont
\footnotesize\itshape\etocskipfirstprefix}
{\allowbreak\,--\,}
{\etocname\unskip}
{.\hfil\par\endgroup\pagebreak[3]}
```

These provisory style definitions rely on the automatic numbering generated by the `enumerate` environments but it is much better to use the further command `\etocnumber` inside the item label, which gives the real thing. The improved definitions will thus be explained later.

Each `\etocsetstyle` command has five mandatory arguments:

$$\backslash\mathrm{etocsetstyle}\{\langle levelname\rangle\}\{\langle start\rangle\}\{\langle prefix\rangle\}\{\langle contents\rangle\}\{\langle finish\rangle\}$$

The initially recognized `\levelname`'s are the sectioning levels of the standard document classes: from *part* (or *book* which is used by the `memoir` class) down to *subparagraph*.

The `⟨start⟩` code is executed when a toc entry of that level is encountered and the previous one was at a higher level. The `⟨finish⟩` code is executed when one again encounters a higher level toc entry. In the mean-time all entries for that level are typeset by executing first the `⟨prefix⟩` code and then the `⟨contents⟩` code.

The commands `\etocname`, `\etocnumber` and `\etocpage` are provided for use inside the `{\langle prefix \rangle}` and `{\langle contents \rangle}` parts of the `\etocsetstyle` specification. They represent of course, the name, number, and page number of the corresponding toc entry.<sup>9</sup>

## 5.2. The `\etocskipfirstprefix` command

The chosen subsubsection style also uses the command `\etocskipfirstprefix`, which, if present, *must* be the very last one in the *start* code. It instructs to not use for the first item the specified “prefix” code.

With this style, one would have to be imaginative to design something then for paragraph and subparagraph entries! perhaps as superscripts? Well, usually one does not need paragraphs and subparagraphs numbered and listed in the TOC, so our putative user here chose a design where no provision is made for them and added the definitive:

```
\etocsetstyle{paragraph}{}{}{}{}  
\etocsetstyle{subparagraph}{}{}{}{}{}{}{}{}
```

This is also the situation with the default package line styles!

### 5.3. The `\etocnumber` command

So far, our specifications would use the numbering generated by the `enumerate` environments, but of course we generally want the actual numbers as found in the `.toc` file. This is available via the `\etocnumber` command. To get the labels in the `enumerate` list to use it we can proceed with the syntax `label=` from the package `enumitem`:

<sup>9</sup> **etoc** uses the `xspace` package, and there is no need to write `\etocname{}` text rather than just `\etocname` text for example. However, this forced us to add a mysterious `\unskip` in the subsubsection style.

## 5. The `\etocsetstyle` command

```
\etocsetstyle{section}
{\begin{enumerate}[label=\etocnumber]}
{\normalsize\bfseries\rmfamily\item}
{\etocname (page \etocpage)}
{\end{enumerate}}
```

Rather than just `\etocnumber` we then used something like `\fbox{\etocnumber}`. Note that `\etocnumber` is a protected command which explains why it can be used inside the label specification without needing an added `\protect`.

### 5.3.1. The `\etocifnumbered` switch

The `\fbox` would give an unaesthetic result in the case of an unnumbered section (which ended up in the table of contents via an `\addcontentsline` command).<sup>10</sup>

The `\etocifnumbered{<A>}{<B>}` command executes `<A>` if the number exists, and `<B>` if not. So we use it in the code which was finally chosen for the section level:

```
\etocsetstyle{section}
{\begin{enumerate}[leftmargin=.75cm, label=\etocifnumbered
  {{{\fboxrule1pt\fcolorbox{green}{white}{\etocnumber}}}}}
{\normalsize\bfseries\rmfamily\item}
{\etocname (page \etocpage)}
{\end{enumerate}}

\etocsetstyle{subsection}
{\begin{enumerate}[leftmargin=0cm, label=\etocnumber]}
{\normalfont \item}
{\etocname (p.\~\etocpage)}
{\end{enumerate}}
```

If we had changed only the section level, and not the subsection level, an error on compilation would have occurred because the package style for subsections expects to start ‘in vertical mode’. An additional `\par` token in the `<contents>` part of the section level would have fixed this: `{... (page \etocpage)\par}`.

## 5.4. The `\etocthenname`, `\etocthenumber`, and `\etocthepage` commands

It is sometimes desirable to have access to the name, number and page number without the `hyperref` link data (and without an `\xspace`): something similar to the starred variant of the `\ref` command, when package `hyperref` is used. For example one may wish to use the unit or page number in some kind of numeric context, or change its formatting. This is provided by the `\etocthe...` commands.

These commands are not protected, so in moving argument contexts (for example in a label specification) they should be preceded by `\protect`.

## 5.5. The `\etoclink` command

The command `\etoclink{<linkname>}` can be used in the line style specifications in a manner analogous to the argument-less commands `\etocname`, `\etocnumber` and

---

<sup>10</sup>as seen below we use `\fcolorbox` rather than `\fbox`. Due to some redefinition made by package `xcolor`, had we used `\fbox` (and not used `hyperref`) we would have needed `\protect\fbox`.

## 5. The `\etocsetstyle` command

`\etocpage`. It creates a link (if such a link was added by `hyperref` to the `.toc` file entry) whose destination is the corresponding document unit and whose name is the given argument.

Hence `\etoclink{\etocthename}` is like the original `\etocname`, except that there is no `\xspace` involved. Also, `\etocname` actually starts with a `\leavevmode`: this was found out to be necessary when `hyperref` has added its link data, during testing of various uses of the first versions of **etoc**.

The command `\etoclink` is protected.

### 5.6. The `\etocsetlevel` command

As already explained in the section 4, one can inform **etoc** of a level to associate to a given sectioning command with `\etocsetlevel`. For example:

```
\etocsetlevel{cell}{0}  
\etocsetlevel{molecule}{1}  
\etocsetlevel{atom}{2}  
\etocsetlevel{nucleus}{3}
```

Of course, in compatibility mode, it will be assumed here that the macros `\l@cell`, `\l@molecule`, ..., pre-exist. If no table of contents is typeset in compatibility mode, then all that matters is that the line styles have been set. If for example `section` is at level 1, then there is no need to do a `\etocsetstyle{molecule}` if `\etocsetstyle{section}` has already been done (and it has been done by the package itself in its definition of its own line styles).

The accepted levels run from -2 to 6 inclusive. Anything else is mapped to 6, which is a dummy level, never displayed. The package does:

```
\etocsetlevel{book}{-2}  
\etocsetlevel{part}{-1}  
\etocsetlevel{chapter}{0}  
\etocsetlevel{section}{1}  
\etocsetlevel{subsection}{2}  
\etocsetlevel{subsubsection}{3}  
\etocsetlevel{paragraph}{4}  
\etocsetlevel{subparagraph}{5}
```

Its own line styles are activated by `\etocclines`. They are illustrated by the main table of contents of this document. The level assignments can be modified at anytime, as has been explained in the section 4.

#### 5.6.1. This is a (pale) red subsubsection for illustrative purposes

Just before this subsubsection we did:

```
\color{red!50}  
\addtocontents{toc}{\string\color{red!50}}
```

The title here would be red in the `article` class, but is black in the `scrartcl` class. In both classes the corresponding entry in the main table of contents at the beginning of this document is red; it is not red in the table of contents at the beginning of this second document part. The reason is that the `<finish>` code for the subsubsection level closed a group; the definition was:



## 6. Am I also red?

```
\etocsetstyle{subsubsection}
{\par\nobreak\beginngroup\normalfont
 \footnotesize\itshape\etocskipfirstprefix}
{\allowbreak\,--\,}
{\etocname\unskip}
{.\hfil\par\endgroup\pagebreak[3]} <--- here is the \endgroup
```

This illustrates the discussion from subsection 1.1. The default package line styles do not contain group opening and closing instructions, so the influence (within TOCs such as the main one in this document) of the added line in the .toc file will propagate until it is cancelled by another explicit such command inserted in the .toc file.

## 6. Am I also red?

Well, actually no in this scrartcl class but I assure you I was in the article class!

```
\normalcolor
\addtocontents{toc}{\string\normalcolor}
```

Back to black. Note that this scope problem arises in real life in a multi-lingual document, as the babel package writes to the .toc file the language changes occurring in the document. There is no easy general solution<sup>11</sup> to this, but it will probably concern only a minority of cases. Again, the line styles defined by **etoc** do not use groups.

## 7. A comparison

The main table of contents was done in the **etoc** style. Let us issue here again two \tableofcontents commands, one with the document class style (with some special centered title in place of the standard Contents heading) and the other one with the style we defined in the previous part on the basis of enumerate environments.

```
\setcounter{secnumdepth}{4}
\setcounter{tocdepth}{4}
```

Let us use the standard formatting of entries, as is provided by the document class, and a two-column layout:

```
\etocstandardlines
\etocruledstyle{% 2 is the default number of columns
 \renewcommand{\etocoprul}{\hrule height0pt}%
 \normalfont\normalsize\rmfamily\itshape
 \parbox{.8\linewidth}{\centering
 This is the global table of contents with standard
 (to the {\ttfamily scrartcl} class) entries
 (and on two columns). Contrarily to
 \hyperref[toc:test]{\color{niceone}the next TOC}
 it contains paragraph entries.}}
\tableofcontents
```

---

<sup>11</sup>one can insert by hand the language changes in each concerned sectioning command.

## 7. A comparison

*This is the global table of contents with standard (to the `scrartcl` class) entries (and on two columns). Contrarily to *the next TOC* it contains paragraph entries.*

<b>I. Overview</b>	<b>4</b>	5.4. The <code>\etocthename</code> , <code>\etoc-</code> <code>thenumber</code> , and <code>\etocthe-</code> <code>page</code> commands . . . . .	15
<b>1. Initial motivation: nested lists</b>	<b>4</b>	5.5. The <code>\etoclink</code> command	15
1.1. Limitations intrinsic to the use of environments . . . . .	4	5.6. The <code>\etocsetlevel</code> com- mand . . . . .	16
<b>2. Line styles and toc display style</b>	<b>4</b>	5.6.1. This is a (pale) red subsubsection for illustrative purposes	16
2.1. <code>\etocsettocstyle</code> for the toc display . . . . .	5	<b>6. Am I also red?</b>	<b>17</b>
2.2. <code>\etocsetstyle</code> for the line styles . . . . .	5	<b>7. A comparison</b>	<b>17</b>
2.3. Compatibility mode . . . . .	5	<b>III. Package commands for toc display styles</b>	<b>21</b>
<b>3. Arbitrarily many TOCs, and lo- cal ones too</b>	<b>5</b>	<b>8. Specifying the toc display style</b>	<b>21</b>
3.1. Labeling and reusing else- where . . . . .	6	8.1. The command <code>\etocruled-</code> <code>style</code> . . . . .	21
3.2. On manually adding lay- out commands to the <code>.toc</code> file . . . . .	6	8.2. The command <code>\etocmul-</code> <code>ticolstyle</code> . . . . .	22
3.3. Shuffling the levels with <code>\etocsetlevel</code> . . . . .	7	8.2.1. The command <code>\etoc-</code> <code>tocstyle</code> . . . . .	22
3.4. Local table of contents for this part . . . . .	7	8.2.1.1. <code>\etoc-</code> <code>tocstyle-</code> <code>with-</code> <code>marks</code> . . . . .	22
3.5. The hyperref option <code>book-</code> <code>marksdepth</code> . . . . .	8	8.2.1.2. Do we really want paragraph entries in the TOC? . . . . .	22
<b>4. Surprising uses of <code>etoc</code></b>	<b>9</b>	8.2.1.3. really? . . . . .	22
4.1. The TOC of TOCs . . . . .	9	8.3. The command <code>\etocruled</code>	22
4.2. Arbitrary “Lists Of..” . . . .	10	8.4. The commands <code>\etoc-</code> <code>framedstyle</code> and <code>\etoc-</code> <code>framed</code> . . . . .	23
4.3. A TOC with a fancy layout	11	8.5. Headings, titles, <code>\etocin-</code> <code>nertopsep</code> . . . . .	23
<b>II. Package commands for line styles</b>	<b>13</b>	8.6. The command <code>\etocset-</code> <code>tocstyle</code> . . . . .	23
<b>5. The <code>\etocsetstyle</code> command</b>	<b>13</b>		
5.1. The <code>\etocname</code> and <code>\etoc-</code> <code>page</code> commands . . . . .	13		
5.2. The <code>\etocskipfirst-</code> <code>prefix</code> command . . . . .	14		
5.3. The <code>\etocnumber</code> command	14		
5.3.1. The <code>\etocifnum-</code> <code>bered</code> switch . . . . .	15		

## 7. A comparison

8.7. The compatibility mode <code>\etocstandarddisplay-</code> <code>style</code> . . . . .	24	<b>12. Customizing <code>etoc</code></b>	<b>30</b>
		12.1. Customizing the <code>etoc</code> pre- defined line styles . . . . .	30
		12.2. Customizing the toc dis- play styles . . . . .	31
<b>9. Starred variants of the <code>\table-</code> <code>ofcontents</code> etc... commands</b>	<b>24</b>	<b>V. Tips</b>	<b>33</b>
<b>10. Table of contents for this part</b>	<b>25</b>	<b>13. ... and tricks</b>	<b>33</b>
10.1. Testing the compatibility mode . . . . .	25	13.1. Hacking framed parboxes .	33
10.2. A framed display . . . . .	25	13.2. Interverting the levels . . .	33
<b>IV. Using and customizing <code>etoc</code></b>	<b>27</b>	13.3. All subsections of this doc- ument . . . . .	34
<b>11. Summary of the main style com- mands</b>	<b>27</b>	13.4. Compatibility with other packages . . . . .	35
11.1. Setting up local styles . . .	27	13.5. $\TeX$ nical matters . . . . .	35
11.2. Setting up toc display styles	27	13.6. Errors and catastrophes . .	35
11.3. Displaying Table of Contents	28	<b>VI. The code</b>	<b>36</b>
11.4. Labels and references . . .	28	<b>14. Implementation</b>	<b>36</b>
11.5. An example . . . . .	28		

We then switch to our set-up from the previous part and add to it:

```
\etocsetstyle{part}
{\begin{enumerate}[label=\etocnumber,leftmargin=1.5em]}
{\etocfontminusone\item}
{\etocname}
{\end{enumerate}}
\tableofcontents \label{toc:test} \ref{toc:main}
```

*This is the global table of contents using quickly defined (and easily improvable) enumerate environments for part, section and subsection, and an ad hoc in-line italic style for subsubsection.*

## I Overview

### 1 Initial motivation: nested lists (page 4)

1.1 Limitations intrinsic to the use of environments (p. 4)

### 2 Line styles and toc display style (page 4)

2.1 `\etocsettocstyle` for the toc display (p. 5)

2.2 `\etocsetstyle` for the line styles (p. 5)

2.3 Compatibility mode (p. 5)

### 3 Arbitrarily many TOCs, and local ones too (page 5)

3.1 Labeling and reusing elsewhere (p. 6)

3.2 On manually adding layout commands to the `.toc` file (p. 6)

## 7. A comparison

- 3.3 Shuffling the levels with `\etoc-setlevel` (p. 7)
- 3.4 Local table of contents for this part (p. 7)
- 3.5 The hyperref option `bookmarks-depth` (p. 8)
- 4** Surprising uses of `etoc` (page 9)
- 4.1 The TOC of TOCs (p. 9)
- 4.2 Arbitrary “Lists Of...” (p. 10)
- 4.3 A TOC with a fancy layout (p. 11)

## II Package commands for line styles

- 5** The `\etocsetstyle` command (page 13)
- 5.1 The `\etocname` and `\etocpage` commands (p. 13)
- 5.2 The `\etocskipfirstprefix` command (p. 14)
- 5.3 The `\etocnumber` command (p. 14)  
*The `\etocifnumbered` switch.*
- 5.4 The `\etocthenname`, `\etocthenumber`, and `\etocthepage` commands (p. 15)
- 5.5 The `\etoclink` command (p. 15)
- 5.6 The `\etocsetlevel` command (p. 16)  
*This is a (pale) red subsubsection for illustrative purposes.*
- 6** Am I also red? (page 17)
- 7** A comparison (page 17)

## III Package commands for toc display styles

- 8** Specifying the toc display style (page 21)
- 8.1 The command `\etocruledstyle` (p. 21)
- 8.2 The command `\etocmulticolstyle` (p. 22)  
*The command `\etocstyle`.*

- 8.3 The command `\etocruled` (p. 22)
- 8.4 The commands `\etocframedstyle` and `\etocframed` (p. 23)
- 8.5 Headings, titles, `\etocinner-topsep` (p. 23)
- 8.6 The command `\etocsettocstyle` (p. 23)
- 8.7 The compatibility mode `\etoc-standarddisplaystyle` (p. 24)
- 9** Starred variants of the `\table-ofcontents` etc... commands (page 24)

## **10** Table of contents for this part (page 25)

- 10.1 Testing the compatibility mode (p. 25)
- 10.2 A framed display (p. 25)

## IV Using and customizing `etoc`

- 11** Summary of the main style commands (page 27)
- 11.1 Setting up local styles (p. 27)
- 11.2 Setting up toc display styles (p. 27)
- 11.3 Displaying Table of Contents (p. 28)
- 11.4 Labels and references (p. 28)
- 11.5 An example (p. 28)
- 12** Customizing `etoc` (page 30)
- 12.1 Customizing the `etoc` pre-defined line styles (p. 30)
- 12.2 Customizing the toc display styles (p. 31)

## V Tips

- 13** ... and tricks (page 33)
- 13.1 Hacking framed parboxes (p. 33)
- 13.2 Interverting the levels (p. 33)
- 13.3 All subsections of this document (p. 34)
- 13.4 Compatibility with other packages (p. 35)

## Part III.

# Package commands for toc display styles

```
\setcounter{tocdepth}{-3}
\localtableofcontents \label{toc:globalcmds}
```

## 8. Specifying the toc display style

The *toc display* style says whether the TOC appears with multiple columns or just one, whether the title is typeset as in the `article` or `book` class, or should be centered above the entries, with rules on its sides, or if the entire TOC should be put in a frame. For example, to opt for a ruled heading and single column layout, one issues commands of the following type:

```
\etocruledstyle[1]{Title}
  \tableofcontents (or \localtableofcontents)
shortcuts:
  \etocruled[1]{Title} (or \etoclocalruled[1]{Title})
```

### 8.1. The command `\etocruledstyle`

The general format of `\etocruledstyle` is:

```
\etocruledstyle[number of columns]{title of the toc}
```

Note that the title is horizontal material, if it does not fit on one line it should be put in a `\parbox` of a given width. We did this and even enclosed the parboxes in `\fboxes` to get frames around them. For the example with the standard formatting we did not use an `\fbox` and got rid of the horizontal rules via:

```
\renewcommand{\etocoprulr}{\hrule height 0pt}
```

The green frame for the heading of the table of contents at the [start of the second part of this document](#) was obtained with:

```
\etocruledstyle[1]{\etocfontminusone\color{green}%
  \fboxrule1pt\fboxsep1ex
  \framebox[\linewidth]
    {\normalcolor\hss Contents of this second part\hss}}
```

## 8. Specifying the toc display style

### 8.2. The command `\etocmulticolstyle`

This is also a command with one optional and one mandatory argument:

`\etocmulticolstyle[⟨number_of_columns⟩]{⟨heading⟩}`

The `⟨number_of_columns⟩` can go from 1 to 10 (it defaults to 2, and from 2 on is passed to a `multicols` environment). The `⟨heading⟩` should be some ‘vertical’ material like:

`⟨heading⟩ = \section*{⟨title⟩}`

[New with 1.07] An explicit `\par` not being accepted in the `⟨heading⟩` argument (this is actually a restriction originating in the `multicols` environment), an implicit one is automatically added by `etoc` at the end of the argument, as in this example which shows how the main table of contents of this document was configured:

```
\etocmulticolstyle{\noindent\bfseries\Large
                  \leaders\hrule height1pt\hfill
                  \MakeUppercase{Table of Contents}}
```

After `\etocmulticolstyle` all future `\tableofcontents` will use the specified style, if not changed in-between. A shortcut for just one table of contents and not affecting the styles of later TOCs is:

`\etocmulticol[⟨number_of_columns⟩]{⟨heading⟩}`

And there is also `\etoclocalmulticol[⟨number_of_columns⟩]{⟨heading⟩}`.

#### 8.2.1. The command `\etoc tocstyle`

`\etoc tocstyle[⟨kind⟩]{⟨number_of_columns⟩}{⟨title⟩}`  
= `\etocmulticolstyle[⟨number_of_columns⟩]{\kind*{⟨title⟩}}`

where `kind` is one of `chapter`, `section`, ... and defaults to `chapter` or `section` depending on the document class.

**8.2.1.1. `\etoc tocstylewithmarks`** `\etoc tocstylewithmarks[⟨kind⟩]{⟨number_of_columns⟩}{⟨title⟩}{⟨mark⟩}`  
= `\etocmulticolstyle[⟨number_of_columns⟩]{\kind*{⟨title⟩ \markboth{\MakeUppercase{⟨mark⟩}}}}`

where `kind` is one of `chapter`, `section`, ... The actual display of the marks depends on the settings of the page style. There is variant `\etoc tocstylewithmarksnouc` which does not uppercase.

#### 8.2.1.2. Do we really want paragraph entries in the TOC?

#### 8.2.1.3. really?

### 8.3. The command `\etocruled`

As a shortcut to set the style with `\etocruledstyle` and then issue a `\tableofcontents`, all inside a group so that future table of contents will not be affected, there is:

`\etocruled[⟨number_of_columns⟩]{⟨title⟩}`

And the local form will be `\etoclocalruled`.

#### 8.4. The commands `\etocframedstyle` and `\etocframed`

Same mechanism:

`\etocframedstyle[⟨number_of_columns⟩]{⟨title⟩}`

and the accompanying shortcut:

`\etocframed[⟨number_of_columns⟩]{⟨title⟩}`

Here the entire table of contents is framed, hence this can only work if it fits on a page. Note that the title itself is not framed, if one wants a frame one should set it up inside the `⟨title⟩` argument to `\etocframedstyle` or `\etocframed`. There is also `\etoclocalframedstyle` and `\etoclocalframed`.

#### 8.5. Headings, titles, `\etocinnertopsep`

[*modified in v1.07*] There is a slight difference between `\etocmulticolstyle` and `\etocruledstyle` or `\etocframedstyle`. For `\etocmulticolstyle` the mandatory `⟨heading⟩` argument can be something like: `\section*{Table of Contents}`. On the contrary `\etocruledstyle` and `\etocframedstyle` expect an argument “in LR mode” (to use the terminology from the *LaTeX, a document preparation system*). This means that multiline contents arguments to `\etocruledstyle` or `\etocframedstyle` must be enclosed in something like a `\parbox`.

[*new in v1.07*] The command `\etocmulticolstyle` now also accepts horizontal mode material in its mandatory argument `⟨heading⟩`: it internally automatically adds a closing `\par`. So one can use for example `\etocmulticolstyle{Hello World}`. Speaking of `\par`, there is a `multicols` aspect which has nothing to do with `etoc`, the input on the left creates a compilation error:

<pre>\begin{multicols}{2}[hello\par world] someone here? \end{multicols}</pre>	<pre>\let\oldpar\par \begin{multicols}{2}[hello\oldpar world]   at least me. \end{multicols}</pre>
--	--

But the code on the right does not. So the package provides `\etocoldpar` as a substitute for `\par` (it executes `\let\etocoldpar\par` just before starting the `multicols` environment and automatically add it to close the heading, and before the vertical skip of value `\etocinnertopsep`).<sup>12</sup> The command `\etocoldpar` can also be used explicitly in the mandatory argument to `\etocmulticolstyle`.

An important dimension used by all three of `\etocmulticolstyle`, `\etocruledstyle` and `\etocframedstyle` is `\etocinnertopsep`. It gives the amount of separation between the heading and the start of the contents. Its default value is `2ex` and it is changed by `\renewcommand*{\etocinnertopsep}{⟨new_value⟩}`, not with `\setlength`.

#### 8.6. The command `\etocsettocstyle`

This is a command with two mandatory arguments:

`\etocsettocstyle{⟨before_toc⟩}{⟨after_toc⟩}`

<sup>12</sup>this command `\etocoldpar` (= working `\par` in the argument to `\etocmulticolstyle`) is not related to the switch `\etocnopar` whose purpose is to tell `etoc` not to do a `\par` before the table of contents.

## 9. Starred variants of the `\tableofcontents` etc... commands

The `{\before_toc}` part is responsible for typesetting the heading, for example it can be something like `\section*{\contentsname}`.

Generally speaking this heading should leave  $\TeX$  in vertical mode when the actual typesetting of the contents will start: the line styles (either from the standard classes or the package default line styles) expect to start in ‘vertical mode’.

It can also contain instructions to mark the page headings. Or it could check (book class) to see if two-column mode is on, and switch to one-column style, and the `\after_toc` part would then reenact the two-column mode.

The previously described commands `\etocmulticolstyle`, `\etocruledstyle`, and `\etocframedstyle` actually call `\etocsettocstyle` as a lower-level routine, and start a `multicols` environment in `{\before_toc}` to close it in `{\after_toc}`.

### 8.7. The compatibility mode `\etocstandarddisplaystyle`

`etoc` will then emulate what the document class would have done regarding the global display style of the table of contents, in its absence. All customizing from inside the class should be obeyed, too.

## 9. Starred variants of the `\tableofcontents` etc... commands

The `\tableofcontents`, `\localtableofcontents`, `\etocmulticol`, etc... have starred variants (the star must be before the other arguments). For all but the `memoir` class, they are like the original. For the `memoir` class, the original prints an entry in the `.toc` file, as is the usage for the original `\tableofcontents` command in that class, whereas the starred variants do not, as is the habit in that class.

As soon as one starts using local table of contents one discovers that the default `memoir` thing which is to create a `chapter` entry for each TOC is not convenient. The command `\etocmemoirtotocfmt{<kind>}{<name>}` will change the format (`<kind>` is `chapter`, `section`, `subsection`... and `<name>` can be for example `\contentsname`.) The initial set-up is with `chapter` and `\contentsname`.

The format of the actual heading of the TOC should also be set appropriately (for example with `\etocstyle`), to use the identical division unit as in the first argument to `\etocmemoirtotocfmt`.

A weird situation arises when one has two successive `\localtableofcontents` (obviously this is not a truly real life situation), just after a `\part` for example. The first one creates (if the default has not been modified as indicated above) a Chapter heading which is written to the `.toc`. Then the second one thinks to be local to this chapter . . . and as a result it displays nothing. The fix is to define the second one to be a clone of the first one.

Independently of the situation with the `memoir` class there is generally speaking a hook macro called `\etocaftertitlehook` which is inhibited by using the starred variants of the displaying commands. Except for the `memoir` class, this hook is initially defined to do nothing. There is also `\etocaftercontentshook`, similarly defined to do nothing. They can be used for some special effects.



## 10. Table of contents for this part

### 10.1. Testing the compatibility mode

As a third example we now print the local table of contents for this part. First we will test the compatibility mode.<sup>13</sup> The original was invisibly defined with a label at the beginning of this part III.

```
\KOMAAoptions{toc=left}
\etocstandarddisplaystyle % necessary for the display to obey toc=left
\etocstandardlines
\setcounter{tocdepth}{3}
\tableofcontents \ref{toc:globalcmds}
```

## Contents

<b>8. Specifying the toc display style</b>	<b>21</b>
8.1. The command <code>\etocruledstyle</code> . . . . .	21
8.2. The command <code>\etocmulticolstyle</code> . . . . .	22
8.2.1. The command <code>\etoctocstyle</code> . . . . .	22
8.3. The command <code>\etocruled</code> . . . . .	22
8.4. The commands <code>\etocframedstyle</code> and <code>\etocframed</code> . . . . .	23
8.5. Headings, titles, <code>\etocinnertopsep</code> . . . . .	23
8.6. The command <code>\etocsettocstyle</code> . . . . .	23
8.7. The compatibility mode <code>\etocstandarddisplaystyle</code> . . . . .	24
<b>9. Starred variants of the <code>\tableofcontents</code> etc... commands</b>	<b>24</b>
<b>10. Table of contents for this part</b>	<b>25</b>
10.1. Testing the compatibility mode . . . . .	25
10.2. A framed display . . . . .	25

### 10.2. A framed display

We now opt for a “framed” style, and specify some colors (including a background color). We modify various things from the package defaults.

```
\etoctoclines
\begingroup % we use a group to limit the scope of the next commands
\renewcommand{\etoccolumnsep}{3em}
\renewcommand{\etocinnerleftsep}{2em}
\renewcommand{\etocinnerrightsep}{2em}
% specify a background color for the toc contents
\renewcommand{\etocbkgcolorcmd}{\color{yellow!10}}
%\renewcommand{\etocbkgcolorcmd}{\relax}
% set up the top and bottom rules
```

<sup>13</sup>the present document uses the `scrartcl` class, and we check here that the `etoc` compatibility mode does respect the customizing done via the class commands.

## Contents

```

\renewcommand{\etocoprulerule}{\hrule height 1pt}
\renewcommand{\etocoprulerulecolorcmd}{\color{red!25}}
\renewcommand{\etocbottomrule}{\hrule height 1pt}
\renewcommand{\etocbottomrulecolorcmd}{\color{red!25}}
% set up the left and right rules
\renewcommand{\etocleftrulerule}{\vrule width 5pt}
\renewcommand{\etocrightulerule}{\vrule width 5pt}
\renewcommand{\etocleftrulerulecolorcmd}{\color{red!25}}
\renewcommand{\etocrightulerulecolorcmd}{\color{red!25}}
% use \fcolorbox to set up a colored frame for the title
\fbxrule1pt
\etocframedstyle{\normalsize\rmfamily\itshape
  \fcolorbox{red}{white}{\parbox{.8\linewidth}{\centering
    This is a table of contents \‘a la \etoc, but just for
    the sections and subsections in this part. As it is put
    in a frame, it has to be small enough to fit on the
    current page. It has the label |toc:b|.}}}
% set up a label for future (or earlier...) reference
\setcounter{tocdepth}{3}
\tableofcontents \label{toc:b} \ref{toc:globalcmds}
\endgroup

```

*This is a table of contents à la **etoc**, but just for the sections and subsections in this part. As it is put in a frame, it has to be small enough to fit on the current page. It has the label `toc:b`.*

### Specifying the toc display style . . . . . 8, p. 21

The command `\etocruledstyle`  
 . . . . . 8.1, p. 21

The command `\etocmulticol-  
 style` . . . . . 8.2, p. 22

The command `\etocetocstyle`.

The command `\etocruled` . .  
 . . . . . 8.3, p. 22

The commands `\etocframed-  
 style` and `\etocframed` . . .  
 . . . . . 8.4, p. 23

Headings, titles, `\etocinner-  
 topsep` . . . . . 8.5, p. 23

The command `\etocsettocstyle`  
 . . . . . 8.6, p. 23

The compatibility mode `\etoc-  
 standarddisplaystyle` . . .  
 . . . . . 8.7, p. 24

### Starred variants of the `\table- ofcontents` etc... commands . . . . . 9, p. 24

### Table of contents for this part . . . . . 10, p. 25

Testing the compatibility mode  
 . . . . . 10.1, p. 25

A framed display . . 10.2, p. 25

# Part IV.

## Using and customizing **etoc**

This is a table of contents for the sections and subsections in this part. It carries the label `toc:c`

<b>Summary of the main style commands</b> . . . . . <b>11, p. 27</b>	Labels and references . . . 11.4, p. 28
Setting up local styles . . . 11.1, p. 27	An example . . . . . 11.5, p. 28
Setting up toc display styles . . . . . 11.2, p. 27	<b>Customizing <b>etoc</b></b> . . . . . <b>12, p. 30</b>
Displaying Table of Contents . . . . . 11.3, p. 28	Customizing the <b>etoc</b> pre-defined line styles . . . . . 12.1, p. 30
	Customizing the toc display styles . . . . . . . 12.2, p. 31

## 11. Summary of the main style commands

### 11.1. Setting up local styles

```
\etocsetstyle{<levelname>}{<start>}{<prefix>}{<contents>}{<finish>}
\etocname, \etocnumber, \etocpage, \etocifnumbered{<A>}{<B>}
\etocthename, \etocthenumber, \etocthepage, \etoclink
```

### 11.2. Setting up toc display styles

```
\etocmulticolstyle[<number_of_columns>]{<heading>}
\etocstyle[<kind>]{<number_of_columns>}{<title>}
\etocstylewithmarks[<kind>]{<number_of_columns>}{<title>}{<mark>}
\etocstylewithmarksnouc[<kind>]{<number_of_columns>}{<title>}{<mark>}
\etocruledstyle[<number_of_columns>]{<title>}
\etocframedstyle[<number_of_columns>]{<title>}
\etocsettocstyle{<before_toc>}{<after_toc>}
```

### 11.3. Displaying Table of Contents

```
\tableofcontents
\localtableofcontents
\etocmulticol[⟨number_of_columns⟩]{⟨heading⟩}
\etoclocalmulticol[⟨number_of_columns⟩]{⟨heading⟩}
\etocruled[⟨number_of_columns⟩]{⟨title⟩}
\etoclocalruled[⟨number_of_columns⟩]{⟨title⟩}
\etocframed[⟨number_of_columns⟩]{⟨title⟩}
\etoclocalframed[⟨number_of_columns⟩]{⟨title⟩}
    and their starred variants
```

### 11.4. Labels and references

The commands (starred or not) to actually display the table of contents can be followed with optional labels or references:

```
\tableofcontents \label{toc:here}
\tableofcontents \ref{toc:far}
\tableofcontents \label{toc:here} \ref{toc:far}
\localtableofcontents \label{toc:here}
    similarly with \etocmulticol etc . . .
```

The commands for local tables of contents do *not* react to a `\ref` following them.

When re-displaying another toc, only its contents are transferred: both the line styles and the toc display style are the ones currently defined, not the ones from the cloned toc.

### 11.5. An example

I got motivated by a question<sup>14</sup> I saw on the T<sub>E</sub>X StackExchange site. I copied the color RGB specifications from an answer which had been provided to the question. The `\etocframedstyle` puts the title on the top rule in a centered position. This is not very convenient for this example so we included the title as part of the `⟨start⟩` code at section level, to get it *inside* the frame.

```
\setcounter{tocdepth}{3}
\begingroup
\definecolor{subsecnum}{RGB}{13,151,225}
\definecolor{secbackground}{RGB}{0,177,235}
\definecolor{tocbackground}{RGB}{212,237,252}

\renewcommand{\etocbkgcolorcmd}{\color{tocbackground}}
\renewcommand{\etocleftrulecolorcmd}{\color{tocbackground}}
\renewcommand{\etocrightrulecolorcmd}{\color{tocbackground}}
\renewcommand{\etocbottomrulecolorcmd}{\color{tocbackground}}
\renewcommand{\etoctoprulecolorcmd}{\color{tocbackground}}
```

<sup>14</sup>[tex.stackexchange.com/questions/83184](https://tex.stackexchange.com/questions/83184)

## 11. Summary of the main style commands

```

\renewcommand{\etoclefttrule}{\vrule width 1cm}
\renewcommand{\etocrighttrule}{\vrule width .5cm}
\renewcommand{\etocbottomrule}{\hrule height 12pt}
\renewcommand{\etocoprul}{\hrule height 12pt}

\renewcommand{\etocinnertopsep}{0pt}
\renewcommand{\etocinnerbottomsep}{0pt}
\renewcommand{\etocinnerleftsep}{0pt}
\renewcommand{\etocinnerrightsep}{0pt}

\newcommand\shiftedwhiterule[2]{%
  \hbox to \linewidth{\color{white}%
    \hspace{1pt}\leaders\hrule height1pt\hfil}\nointerlineskip
  \vskip#2}

\etocsetstyle{subsubsection}{\etocskipfirstprefix}
  {\shiftedwhiterule{\leftskip}{6pt}}
  {\sffamily\footnotesize
    \leftskip2.5cm\hangindent1cm\rightskip1cm\noindent
    \hbox to 1cm{\color{subsecnum}\etocnumber\hss}%
    \color{black}\etocname\leaders\hbox to .2cm{\hss.}\hfill
    \rlap{\hbox to 1cm{\hss\etocpage\hskip.2cm}}\par
    \nointerlineskip\vskip3pt}
  {}

\etocsetstyle{subsection}{\etocskipfirstprefix}
  {\shiftedwhiterule{1.5cm}{6pt}}
  {\sffamily\small
    \leftskip1.5cm\hangindent1cm\rightskip1cm\noindent
    \hbox to 1cm{\color{subsecnum}\etocnumber\hss}%
    \color{black}\etocname\leaders\hbox to .2cm{\hss.}\hfill
    \rlap{\hbox to 1cm{\hss\etocpage\hskip.2cm}}\par
    \nointerlineskip\vskip6pt}
  {}

\newcommand{\coloredstuff}[2]{%
  \leftskip0pt\rightskip0pt\parskip0pt
  \fboxsep0pt % \colorbox uses \fboxsep also when no frame!
  \noindent\colorbox{secbackground}
    {\parbox{\linewidth}{%
      \vskip5pt
      {\noindent\color{#1}#2\par\nointerlineskip}
      \vskip3pt}}%
  \par\nointerlineskip}

\etocsetstyle{section}
  {\coloredstuff{white}
    {\hfil \hyperref[toc:b]{\bfseries\large I am a twin of
      that other TOC (click me!)}\hfil}}
  {\vskip3pt\sffamily\small}
  {\coloredstuff{white}{\hbox to 1.5cm{\hss\etocnumber\hskip.2cm}%

```

## 12. Customizing **etoc**

```

\etocname\hfill\hbox{\etocpage\hskip.2cm}}\vskip6pt}
{}

\etocframedstyle[1]{}
\tableofcontents \label{toc:clone} \ref{toc:globalcmds}
\endgroup

```

The coding is a bit involved<sup>15</sup> as it does not use any additional package. A better solution would be to use some package to set up a background color possibly extending across pages, as the framed style (which we used to get this background color) can only deal with material short enough to fit on one page.

Regarding colors, generally speaking all color commands inside **etoc** are initially defined to do nothing, and the choice to use or not colors is left to the user.

I am a twin of that other TOC (click me!)		
8	Specifying the toc display style	21
8.1	The command <code>\etocruledstyle</code> .....	21
8.2	The command <code>\etocmulticolstyle</code> .....	22
8.2.1	The command <code>\etocstyle</code> .....	22
8.3	The command <code>\etocruled</code> .....	22
8.4	The commands <code>\etocframedstyle</code> and <code>\etocframed</code> ..	23
8.5	Headings, titles, <code>\etocinnertopsep</code> .....	23
8.6	The command <code>\etocsettocstyle</code> .....	23
8.7	The compatibility mode <code>\etocstandarddisplaystyle</code> ..	24
9	Starred variants of the <code>\tableofcontents</code> etc... commands	24
10	Table of contents for this part	25
10.1	Testing the compatibility mode .....	25
10.2	A framed display .....	25

## 12. Customizing **etoc**

### 12.1. Customizing the **etoc** pre-defined line styles

We will simply list the relevant commands as defined in the package. Customizing them goes through suitable `\renewcommands`:

```
\newcommand*\etocfontminustwo{\normalfont \LARGE \bfseries}
```

<sup>15</sup>and reveals the author's preference for the T<sub>E</sub>X syntax...

## 12. Customizing *etoc*

```
\newcommand*\etocfontminusone{\normalfont \large \bfseries}
\newcommand*\etocfontzero{\normalfont \large \bfseries}
\newcommand*\etocfontone{\normalfont \normalsize \bfseries}
\newcommand*\etocfonttwo{\normalfont \normalsize}
\newcommand*\etocfontthree{\normalfont \footnotesize}

\newcommand*\etocsepminustwo{4ex plus .5ex minus .5ex}
\newcommand*\etocsepminusone{4ex plus .5ex minus .5ex}
\newcommand*\etocsepzero{2.5ex plus .4ex minus .4ex}
\newcommand*\etocseppone{1.5ex plus .3ex minus .3ex}
\newcommand*\etocseptwo{1ex plus .15ex minus .15ex}
\newcommand*\etocsepthree{.25ex plus .05ex minus .05ex}

\newcommand*\etocminustwoleftmargin{1.5em plus 0.5fil}
\newcommand*\etocminustworightmargin{1.5em plus -0.5fil}
\newcommand*\etocminusoneleftmargin{1em}
\newcommand*\etocminusonerightmargin{1em}

\newcommand*\etocbaselinespreadminustwo{1}
\newcommand*\etocbaselinespreadminusone{1}
\newcommand*\etocbaselinespreadzero{1}
\newcommand*\etocbaselinespreadone{1}
\newcommand*\etocbaselinespreadtwo{1}
\newcommand*\etocbaselinespreadthree{.9}

\newcommand*\etoclineleaders
{\hbox{\normalfont\normalsize\hbox to 2ex {\hss.\hss}}}

\newcommand*\etocabbrevpagename{p.~}
\newcommand*\etocpartname{\partname}
\newcommand*\etocbookname{Book}
```

No customizing of the standard line styles is possible from within *etoc*. As already explained, when `\etocstandardlines` has been issued, the package just makes itself very discrete and acts only at the global level, and the TOC entries are (hopefully) formatted as would have happened in the absence of *etoc*.<sup>16</sup>

The `\etocstandardlines` mechanism will work also with sectioning commands made known to *etoc* via `\etocsetlevel`, under the condition of course that these sectioning commands are accompanied with all the relevant definitions for typesetting toc entries in the L<sup>A</sup>T<sub>E</sub>X default manner (existence of the macros `\l@something . . .`).

Using the `\etoclines` or even just one `\etocsetstyle` command has the effect (when done in the document body, not in the preamble) of switching off the compatibility mode.

### 12.2. Customizing the toc display styles

Again we list the relevant macros, what they do should be legible from their names. Note that `\renewcommand`'s and not `\setlength`'s have to be used for what appear to

---

<sup>16</sup>with the KOMA-script classes, we noticed that `\etocstandarddisplaystyle` was apparently needed for the KOMA options `toc=left` to be active at the level of the line entries.

## 12. Customizing *etoc*

be lengths, and that color commands are not just color specifications, they must include `\color`, and are canceled by re-defining them to do `\relax`.

```
\newcommand*\etocabovetocskip{3.5ex plus 1ex minus .2ex}
\newcommand*\etocbelowtocskip{3.5ex plus 1ex minus .2ex}
```

```
\newcommand*\etoccolumnsep{2em}
\newcommand*\etocmulticolsep{0ex}
\newcommand*\etocmulticolpretolerance{-1}
\newcommand*\etocmulticoltolerance{200}
\newcommand*\etocdefaultnbcot{2}
\newcommand*\etocinnertopsep{2ex}
\newcommand*\etocbottomrule{\hrule}
\newcommand*\etocbottomrulecolorcmd{\relax}
```

% for the framed style only:

```
\newcommand*\etocinnerleftsep{2em}
\newcommand*\etocinnerrightsep{2em}
\newcommand*\etocinnerbottomsep{3.5ex}
```

```
\newcommand*\etoclefttrule{\vrule}
\newcommand*\etocrighttrule{\vrule}
\newcommand*\etocbottomrule{\hrule}
\newcommand*\etoclefttrulecolorcmd{\relax}
\newcommand*\etocrighttrulecolorcmd{\relax}
\newcommand*\etocbottomrulecolorcmd{\relax}
```

```
\newcommand*\etocbkcolorcmd{\relax}
```

% hooks

```
\newcommand\etocframedmphook{\relax}
```

The `\etocframedmphook` is positioned immediately after the beginning of a minipage environment where the contents of the framed TOC are typeset.

The `\...colorcmd` things are initially set to be `\relax`, so there is no need to do `\usepackage{color}` if the document does not use colors. If the scope of a change to a color command such as `\etocbkcolorcmd` has not been limited to a group and one then wishes to let it again be `\relax` one must use a `\renewcommand` and not `\let\etocbkcolorcmd\relax`.

Regarding the dimensions of the top rule they can be specified in ex's or em's as in this example:

```
\renewcommand{\etocbottomrule}{\hrule height 1ex}
```

The package code is done in such a manner that it is the font size in instance at the end of typesetting the title argument to `\etocruledtoc` or `\etocframedtoc` which will be used for the meaning of the '1ex'. Of course also the other rule commands can have their dimensions in font relative units, but their values are decided on the basis of the font in effect just before the table of contents.

The top and bottom rules do not have to be rules and can be horizontal *leaders* (of a specified height) in the general T<sub>E</sub>X sense. However the left and right rules are not used as (horizontal) leaders but as objects of a given specified width. Note that *only* the Plain T<sub>E</sub>X syntax for rules is accepted here.



# Part V.

## Tips

### 13. ... and tricks

#### 13.1. Hacking framed parboxes

```
\renewcommand\etocstoprule{\hrule height 2pt depth 2pt}
\etocruled{\color{green}\fboxrule2pt\fboxseplex
  \fbox{\raisebox{-\fontdimen22\textfont2}
    {\color{blue}\parbox{.5\linewidth}
      {\normalfont This text is perfectly centered
        vertically with respect to the
        surrounding horizontal rules.}}}}
\ref{toc:globalcmds}
```

This text is perfectly centered vertically with respect to the surrounding horizontal rules.

<b>Specifying the toc display style</b> . . . . .	The command <code>\etocsettocstyle</code> . . . . .
8, p. 21	8.6, p. 23
The command <code>\etocruledstyle</code> . . . . .	The compatibility mode <code>\etocstandard-</code>
8.1, p. 21	<code>displaystyle</code> . . . . .
The command <code>\etocmulticolstyle</code> . . . . .	8.7, p. 24
8.2, p. 22	<b>Starred variants of the <code>\tableofcon-</code></b>
The command <code>\etocnocstyle</code> . . . . .	<b>tents etc... commands</b> . . . . .
	9, p. 24
The command <code>\etocruled</code> . . . . .	<b>Table of contents for this part</b> . . . . .
8.3, p. 22	10, p. 25
The commands <code>\etocframedstyle</code> and	Testing the compatibility mode . . . . .
<code>\etocframed</code> . . . . .	10.1, p. 25
8.4, p. 23	A framed display . . . . .
Headings, titles, <code>\etocinnertopsep</code> . . . . .	10.2, p. 25
8.5, p. 23	

#### 13.2. Interverting the levels

Let us display and count all subsections occurring in this document (see section 4 for other uses of this technique):

```
\setcounter{tocdepth}{2}
\etocsetlevel{part}{3}
\etocsetlevel{section}{3}
\etocsetstyle{subsection}{\begin{enumerate}[itemsep=0pt,%
label=,leftmargin=0pt]}
{\normalfont\bfseries\item}
{\roman{enumi}. \normalfont\etocname (\etocnumber, p.\~\etocpage)}
{\end{enumerate}}
\renewcommand{\etoccolumnsep}{2.75em}
```

```
\renewcommand{\columnseprule}{1pt}
\etocmarkbothnouc{List of all subsections}
\etocmulticol[3]{\subsection{All subsections of this document}}
\setcounter{tocdepth}{3}
```

### 13.3. All subsections of this document

- |  |  |   |
|--|--|---|
| <p><b>i.</b> Limitations intrinsic to the use of environments (1.1, p. 4)</p> <p><b>ii.</b> <code>\etocsettocstyle</code> for the toc display (2.1, p. 5)</p> <p><b>iii.</b> <code>\etocsetstyle</code> for the line styles (2.2, p. 5)</p> <p><b>iv.</b> Compatibility mode (2.3, p. 5)</p> <p><b>v.</b> Labeling and reusing elsewhere (3.1, p. 6)</p> <p><b>vi.</b> On manually adding layout commands to the .toc file (3.2, p. 6)</p> <p><b>vii.</b> Shuffling the levels with <code>\etocsetlevel</code> (3.3, p. 7)</p> <p><b>viii.</b> Local table of contents for this part (3.4, p. 7)</p> <p><b>ix.</b> The hyperref option <code>bookmarksdepth</code> (3.5, p. 8)</p> <p><b>x.</b> The TOC of TOCs (4.1, p. 9)</p> <p><b>xi.</b> Arbitrary “Lists Of...” (4.2, p. 10)</p> <p><b>xii.</b> A TOC with a fancy layout (4.3, p. 11)</p> <p><b>xiii.</b> The <code>\etocname</code> and <code>\etocpage</code> commands (5.1, p. 13)</p> | <p><b>xiv.</b> The <code>\etocskipfirstprefix</code> command (5.2, p. 14)</p> <p><b>xv.</b> The <code>\etocnumber</code> command (5.3, p. 14)</p> <p><b>xvi.</b> The <code>\etocthename</code>, <code>\etocthenumber</code>, and <code>\etocthepage</code> commands (5.4, p. 15)</p> <p><b>xvii.</b> The <code>\etoclink</code> command (5.5, p. 15)</p> <p><b>xviii.</b> The <code>\etocsetlevel</code> command (5.6, p. 16)</p> <p><b>xix.</b> The command <code>\etocruledstyle</code> (8.1, p. 21)</p> <p><b>xx.</b> The command <code>\etocmulticolstyle</code> (8.2, p. 22)</p> <p><b>xxi.</b> The command <code>\etocruled</code> (8.3, p. 22)</p> <p><b>xxii.</b> The commands <code>\etocframedstyle</code> and <code>\etocframed</code> (8.4, p. 23)</p> <p><b>xxiii.</b> Headings, titles, <code>\etocinnertopsep</code> (8.5, p. 23)</p> <p><b>xxiv.</b> The command <code>\etocsettocstyle</code> (8.6, p. 23)</p> <p><b>xxv.</b> The compatibility mode <code>\etocstandarddisplaystyle</code> (8.7, p. 24)</p> <p><b>xxvi.</b> Testing the compatibility mode (10.1, p. 25)</p> | <p><b>xxvii.</b> A framed display (10.2, p. 25)</p> <p><b>xxviii.</b> Setting up local styles (11.1, p. 27)</p> <p><b>xxix.</b> Setting up toc display styles (11.2, p. 27)</p> <p><b>xxx.</b> Displaying Table of Contents (11.3, p. 28)</p> <p><b>xxxi.</b> Labels and references (11.4, p. 28)</p> <p><b>xxxii.</b> An example (11.5, p. 28)</p> <p><b>xxxiii.</b> Customizing the <code>etoc</code> pre-defined line styles (12.1, p. 30)</p> <p><b>xxxiv.</b> Customizing the toc display styles (12.2, p. 31)</p> <p><b>xxxv.</b> Hacking framed parboxes (13.1, p. 33)</p> <p><b>xxxvi.</b> Interverting the levels (13.2, p. 33)</p> <p><b>xxxvii.</b> All subsections of this document (13.3, p. 34)</p> <p><b>xxxviii.</b> Compatibility with other packages (13.4, p. 35)</p> <p><b>xxxix.</b> T<sub>E</sub>Xnical matters (13.5, p. 35)</p> <p><b>xl.</b> Errors and catastrophes (13.6, p. 35)</p> |
|--|--|---|

### 13.4. Compatibility with other packages

**etoc** uses the packages `multicol` and `xspace`. It is `hyperref` aware and hopefully `hyperref` compatible! It doesn't matter whether **etoc** or `hyperref` is loaded first.

The contents of the `.toc` file (if it exists) are read into memory by **etoc** once, at the time of `\usepackage{etoc}`. The `.toc` file will be opened for write operations only at the time of the first TOC displaying command.

When a `\localtableofcontents` is inserted by the user in the document, a line containing an **etoc** inner command and an identification number is added to the `.toc` file. The correct local table of contents will be displayed only on the next latex run.

**etoc** expects the document sectioning units to write their data into the file having extension `.toc`, in the form of lines containing the `\contentsline` command and its arguments. The macros `\etocname`, `\etocnumber`, and `\etocpage` contain the `hyperref` links, if present (note that the `linktoc=all` option of `hyperref` tells it to put a link also in the page number corresponding to a given toc entry). The tables of contents of the present document are fully linked.

It is possible to customize (using package `tocloft` for example) throughout the document the macros `\l@section`, `\l@subsection` ... and the effect will be seen in the next table of contents typeset by **etoc** in compatibility mode.

### 13.5. TeXnical matters

The `\etocname`, `\etocnumber`, `\etocpage` and `\etocifnumbered` macros end with an `\xspace`. They are protected against premature expansion. And they will contain the suitable `hyperref` links. The command `\etoclink` is also protected against premature expansion.

On the other hand `\etocthenname`, `\etocthenumber`, `\etocthepage` do not end with `\xspace`, do not represent `hyperref` links, and are not protected against expansion.

The commands such as `\etocsetstyle`, `\etocsetlevel`, `\etocsettocstyle`, `\etocmulticolstyle`, `\etocruledstyle`, `\etocframedstyle` obey L<sup>A</sup>T<sub>E</sub>X's groups. All TOCs are typeset inside groups.

### 13.6. Errors and catastrophes

After using `\etocsetstyle` for one level, the remaining uncustomized levels use the **etoc**'s default styles. One has to make sure that all levels needed for the next table of contents are mutually compatible.

When using multiple `\tableofcontents` commands in a document, one should beware from adding typesetting instructions directly in the `.toc` file, as they will be executed by **etoc** for all TOCs: even for a `\localtableofcontents` it doesn't matter if that instruction seems to concern material outside of its scope, it will get executed nevertheless. If absolutely necessary these instructions should be done in such a way that they can be activated or deactivated easily from the document source, as need be.

Do not clone a clone but produce rather twins by cloning the same original local table of contents.

As is usual with toc and labels, after each change, one has to run latex a certain number of times to let the produced document get its final appearance (at least twice).

# Part VI.

## The code

This source file `etoc.dtx` produces `etoc.sty` when one does `latex etoc.dtx` or `pdflatex etoc.dtx` (an `etoc.ins` file is also produced, for distributions expecting it for installation). Two more runs are necessary to finish producing the documentation. The `etoc.sty` file should be moved to a suitable location within the  $\mathrm{T}_{\mathrm{E}}\mathrm{X}$  installation.

### 14. Implementation

Writing-up source code comments is hopefully for a future release.

```
1 \ProvidesPackage{etoc}
2 [2013/01/29 v1.07 easily customizable TOCs (jfb)]
3 \NeedsTeXFormat{LaTeX2e}
4 \RequirePackage{multicol}
5 \RequirePackage{xspace}
6 \DeclareOption*{\PackageWarning{etoc}{Option ‘\CurrentOption’ is unknown.}}
7 \ProcessOptions\relax

placeholder for comments
8 \newtoks\Etoc@toctoks
9 \def\Etoc@par{\par}
10 \newcommand*{\etocnopar}{\def\Etoc@par{}}
11 \newif\ifEtoc@jj % book
12 \newif\ifEtoc@j % part
13 \newif\ifEtoc@ % chapter
14 \newif\ifEtoc@i % section
15 \newif\ifEtoc@ii % subsection
16 \newif\ifEtoc@iii % subsubsection
17 \newif\ifEtoc@iv % paragraph
18 \newif\ifEtoc@v % subparagraph
19 \newif\ifEtoc@number
20 \newif\ifEtoc@hyperref
21 \newif\ifEtoc@tocwithid
22 \newif\ifEtoc@standard
23 \newif\ifEtoc@part

placeholder for comments
24 \newif\ifEtoc@localtoc
25 \newif\ifEtoc@skipthisone
26 \newif\ifEtoc@stoptoc
27 \newif\ifEtoc@notactive
28 \newcounter{etoc@tocid}
29 \newif\ifEtoc@mustclosegroup
30 \newif\ifEtoc@tocopenedforwrite

placeholder for comments
31 \ifclassloaded{memoir}{\def\Etoc@minf{-\thr@@}}{\def\Etoc@minf{-\tw@}}
32 \def\Etoc@@@minustwo@{-\tw@}
```

## 14. Implementation

```

33 \let\Etoc@@minusone@@\m@ne
34 \chardef\Etoc@@zero@@ 0
35 \let\Etoc@@one@@ \@ne
36 \let\Etoc@@two@@ \tw@
37 \let\Etoc@@three@@ \thr@@
38 \chardef\Etoc@@four@@ 4
39 \chardef\Etoc@@five@@ 5
40 \chardef\Etoc@@six@@ 6
41 \let\Etoc@localtop\Etoc@@minustwo@@
42 \def\Etoc@@minustwo@{minustwo}
43 \def\Etoc@@minusone@{minusone}
44 \def\Etoc@@zero@{zero}
45 \def\Etoc@@one@{one}
46 \def\Etoc@@two@{two}
47 \def\Etoc@@three@{three}
48 \def\Etoc@@four@{four}
49 \def\Etoc@@five@{five}
50 %\def\Etoc@@six@{six}

placeholder for comments
51 \def\Etoc@levellist{}
52 \def\Etoc@newlevel#1{%
53   \def\Etoc@levellist@elt{\noexpand\Etoc@levellist@elt\noexpand}%
54   \edef\Etoc@levellist{\Etoc@levellist\Etoc@levellist@elt#1}}
55 \def\etocsetlevel#1#2{%
56   \expandafter\Etoc@newlevel\csname l@#1\endcsname
57   \ifcase#2\relax
58     \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@zero@@
59     \expandafter\let \csname Etoc@#1@\endcsname\Etoc@@zero@
60   \or
61     \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@one@@
62     \expandafter\let \csname Etoc@#1@\endcsname\Etoc@@one@
63   \or
64     \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@two@@
65     \expandafter\let \csname Etoc@#1@\endcsname\Etoc@@two@
66   \or
67     \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@three@@
68     \expandafter\let \csname Etoc@#1@\endcsname\Etoc@@three@
69   \or
70     \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@four@@
71     \expandafter\let \csname Etoc@#1@\endcsname\Etoc@@four@
72   \or
73     \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@five@@
74     \expandafter\let \csname Etoc@#1@\endcsname\Etoc@@five@
75   \or
76     \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@six@@
77   \else
78     \ifnum#2=\m@ne
79       \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@minusone@@
80       \expandafter\let \csname Etoc@#1@\endcsname\Etoc@@minusone@
81     \else
82       \ifnum#2=-\tw@
83         \expandafter\let \csname Etoc@#1@@\endcsname\Etoc@@minustwo@@

```

## 14. Implementation

```

84     \expandafter\let \csname Etoc@#1@\endcsname\Etoc@@minustwo@
85   \else
86     \PackageWarning{etoc}
87       {unexpected value ‘#2’ in \string\etocsetlevel.^^}%
88       Should be -2,-1, 0, 1, 2, 3, 4, 5, or 6. Set to 6 (=ignored)}%
89     \expandafter\let\csname Etoc@#1@@\endcsname\Etoc@@six@@
90 \fi\fi\fi}
91 \etocsetlevel{book}{-2}
92 \etocsetlevel{part}{-1}
93 \etocsetlevel{chapter}{0}
94 \etocsetlevel{section}{1}
95 \etocsetlevel{subsection}{2}
96 \etocsetlevel{subsubsection}{3}
97 \etocsetlevel{paragraph}{4}
98 \etocsetlevel{subparagraph}{5}

placeholder for comments
99 \def\Etoc@setflags #1{%
100   \ifcase #1\relax
101     \global\Etoc@vfalse
102     \global\Etoc@ivfalse
103     \global\Etoc@iiifalse
104     \global\Etoc@iifalse
105     \global\Etoc@ifalse
106     \global\Etoc@true
107   \or
108     \global\Etoc@vfalse
109     \global\Etoc@ivfalse
110     \global\Etoc@iiifalse
111     \global\Etoc@iifalse
112     \global\Etoc@ittrue
113   \or
114     \global\Etoc@vfalse
115     \global\Etoc@ivfalse
116     \global\Etoc@iiifalse
117     \global\Etoc@iittrue
118   \or
119     \global\Etoc@vfalse
120     \global\Etoc@ivfalse
121     \global\Etoc@iiittrue
122   \or
123     \global\Etoc@vfalse
124     \global\Etoc@ivtrue
125   \or
126     \global\Etoc@vtrue
127   \else
128     \ifnum#1=\m@ne
129       \global\Etoc@vfalse
130       \global\Etoc@ivfalse
131       \global\Etoc@iiifalse
132       \global\Etoc@iifalse
133       \global\Etoc@ifalse
134       \global\Etoc@false

```

## 14. Implementation

```

135     \global\Etoc@jtrue
136   \else
137     \global\Etoc@vfalse
138     \global\Etoc@ivfalse
139     \global\Etoc@iiiifalse
140     \global\Etoc@iifalse
141     \global\Etoc@ifalse
142     \global\Etoc@false
143     \global\Etoc@jfalse
144     \global\Etoc@jjtrue
145   \fi
146 \fi}

placeholder for comments
147 \AtBeginDocument{%
148 \ifpackageloaded{hyperref}{\Etoc@hyperreftrue
149                               \def\Etoc@et@hop#1#2#3#4#5{#1{#3}{#4}{#5}#2}}
150                               {\Etoc@hyperreffalse
151                               \def\Etoc@et@hop#1#2#3#4{#1{#3}{#4}#2}}}
152 \def\Etoc@swa#1{%
153   \Etoc@et@hop
154   {\Etoc@savedcontentsline{#1}}
155   {\Etoc@prefix\Etoc@contents}}
156 \def\Etoc@swb#1{%
157   \Etoc@et@hop
158   {\Etoc@savedcontentsline{#1}}
159   {\Etoc@contents}}
160 \let\etocskipfirstprefix\@thirdofthree

placeholder for comments
161 \def\Etoc@etoccontentsline#1{%
162   \global\expandafter\let\expandafter\Etoc@tmp\csname Etoc@#1@\endcsname
163   \Etoc@skipthisonefalse
164   \ifEtoc@hyperref
165     \def\Etoc@next{\expandafter\@gobbletwo\@gobblefour}%
166   \else
167     \def\Etoc@next{\expandafter\@gobble\@gobblefour}%
168   \fi
169   \ifnum\Etoc@tmp=\Etoc@six@@
170     \Etoc@skipthisonetrue
171   \else
172     \ifEtoc@localtoc
173       \let\Etoc@prenext\relax
174       \ifEtoc@stoptoc
175         \Etoc@skipthisonetrue
176       \fi
177     \ifnum\Etoc@tmp<\Etoc@localtop
178       \def\Etoc@prenext{\global\Etoc@stoptoctrue}%
179       \Etoc@skipthisonetrue
180     \fi
181     \ifEtoc@notactive
182       \def\Etoc@prenext{\Etoc@setflags{\Etoc@tmp}}%
183       \Etoc@skipthisonetrue

```

## 14. Implementation

```

184     \fi
185     \Etoc@prenext
186   \fi
187 \fi
188 \ifnum\c@tocdepth<\Etoc@tmp\relax\else
189 \ifEtoc@skipthisone\else
190 \global\let\Etoc@next\relax
191 \ifcase\Etoc@tmp
192   \ifEtoc@v \Etoc@end@five\fi
193   \ifEtoc@iv \Etoc@end@four\fi
194   \ifEtoc@iii \Etoc@end@three\fi
195   \ifEtoc@ii \Etoc@end@two\fi
196   \ifEtoc@i \Etoc@end@one\fi
197   \ifEtoc@ \else \def\Etoc@next{\Etoc@begin@zero}\fi
198   \def\Etoc@contents{\Etoc@contents@zero}%
199   \def\Etoc@prefix{\Etoc@prefix@zero}%
200 \or
201   \ifEtoc@v \Etoc@end@five\fi
202   \ifEtoc@iv \Etoc@end@four\fi
203   \ifEtoc@iii \Etoc@end@three\fi
204   \ifEtoc@ii \Etoc@end@two\fi
205   \ifEtoc@i \else \def\Etoc@next{\Etoc@begin@one}\fi
206   \def\Etoc@contents{\Etoc@contents@one}%
207   \def\Etoc@prefix{\Etoc@prefix@one}%
208 \or
209   \ifEtoc@v \Etoc@end@five\fi
210   \ifEtoc@iv \Etoc@end@four\fi
211   \ifEtoc@iii \Etoc@end@three\fi
212   \ifEtoc@ii \else \def\Etoc@next{\Etoc@begin@two}\fi
213   \def\Etoc@contents{\Etoc@contents@two}%
214   \def\Etoc@prefix{\Etoc@prefix@two}%
215 \or
216   \ifEtoc@v \Etoc@end@five\fi
217   \ifEtoc@iv \Etoc@end@four\fi
218   \ifEtoc@iii \else \def\Etoc@next{\Etoc@begin@three}\fi
219   \def\Etoc@contents{\Etoc@contents@three}%
220   \def\Etoc@prefix{\Etoc@prefix@three}%
221 \or
222   \ifEtoc@v \Etoc@end@five\fi
223   \ifEtoc@iv \else \def\Etoc@next{\Etoc@begin@four}\fi
224   \def\Etoc@contents{\Etoc@contents@four}%
225   \def\Etoc@prefix{\Etoc@prefix@four}%
226 \or
227   \ifEtoc@v \else \def\Etoc@next{\Etoc@begin@five}\fi
228   \def\Etoc@contents{\Etoc@contents@five}%
229   \def\Etoc@prefix{\Etoc@prefix@five}%
230 \else
231   \ifnum\Etoc@tmp=\m@ne
232     \ifEtoc@v \Etoc@end@five\fi
233     \ifEtoc@iv \Etoc@end@four\fi
234     \ifEtoc@iii \Etoc@end@three\fi
235     \ifEtoc@ii \Etoc@end@two\fi

```



## 14. Implementation

```
236 \ifEtoc@i \Etoc@end@one\fi
237 \ifEtoc@ \Etoc@end@zero\fi
238 \ifEtoc@j \else \def\Etoc@next{\Etoc@begin@minusone}\fi
239 \def\Etoc@contents{\Etoc@contents@minusone}%
240 \def\Etoc@prefix{\Etoc@prefix@minusone}%
241 \else
242 \ifEtoc@v \Etoc@end@five\fi
243 \ifEtoc@iv \Etoc@end@four\fi
244 \ifEtoc@iii \Etoc@end@three\fi
245 \ifEtoc@ii \Etoc@end@two\fi
246 \ifEtoc@i \Etoc@end@one\fi
247 \ifEtoc@ \Etoc@end@zero\fi
248 \ifEtoc@j \Etoc@end@minusone\fi
249 \ifEtoc@jj \else \def\Etoc@next{\Etoc@begin@minustwo}\fi
250 \def\Etoc@contents{\Etoc@contents@minustwo}%
251 \def\Etoc@prefix{\Etoc@prefix@minustwo}%
252 \fi
253 \fi
254 \ifnum\Etoc@tmp=\m@ne\Etoc@parttrue\else\Etoc@partfalse\fi
255 \Etoc@setflags{\Etoc@tmp}%
256 \fi\fi
257 \Etoc@next
258 \@firstoftwo{\Etoc@swa{#1}}{\Etoc@swb{#1}}
placeholder for comments
259 \def\Etoc@lxyz #1#2{%
260 \@namedef{etocpage }{\leavevmode #2\xspace}%
261 \Etoc@getthepage #2\etoc@
262 \@namedef{etocname }{\leavevmode #1\xspace}%
263 \def\etocthename{#1}%
264 \Etoc@getnb #1\relax\relax\etoc@
265 \ifEtoc@number\else
266 \ifEtoc@part
267 \Etoc@getit #1\hspace\relax\etoc@
268 \fi
269 \fi}
placeholder for comments
270 \def\Etoc@getnb #1{\let\Etoc@next\Etoc@getnb@nohyp
271 \ifEtoc@hyperref\ifx #1\hyper@linkstart
272 \let\Etoc@next\Etoc@getnb@hyp
273 \fi\fi
274 \Etoc@next #1}
275 %
276 \def\Etoc@getit #1{\let\Etoc@next\Etoc@getit@nohyp
277 \ifEtoc@hyperref\ifx #1\hyper@linkstart
278 \let\Etoc@next\Etoc@getit@hyp
279 \fi\fi
280 \Etoc@next #1}
281 %
282 \def\Etoc@getthepage #1{\let\Etoc@next\Etoc@getthepage@nohyp
283 \ifEtoc@hyperref\ifx #1\hyper@linkstart
284 \let\Etoc@next\Etoc@getthepage@hyp
```

## 14. Implementation

```
285 \fi\fi
286 \Etoc@next #1}
287 \def\Etoc@getthepage@nohyp #1\etoc@{\def\etocthepage{#1}}
288 \def\Etoc@getthepage@hyp #1#2#3#4#5\etoc@{%
289 \namedef{etoclink }##1{#1{#2}{#3}{##1}#5}%
290 \def\etocthepage{#4}}

placeholder for comments

291 %
292 \def\Etoc@getnb@nohyp #1#2#3\etoc@{%
293 \def\Etoc@getname ##1\relax\relax\etoc@{%
294 \@namedef{etocname }{\leavevmode ##1\hspace}%
295 \def\etocthename{##1}%
296 }%
297 \ifx #1\numberline
298 \@namedef{etocnumber }{\leavevmode #2\hspace}%
299 \def\etocthenumber{#2}%
300 \Etoc@numbertrue
301 \Etoc@getname #3\etoc@
302 \else
303 \@namedef{etocnumber }{\leavevmode\hspace}%
304 \def\etocthenumber{}%
305 \Etoc@numberfalse
306 \fi
307 }

placeholder for comments

308 \def\Etoc@getnb@hyp #1#2#3#4#5#6\etoc@{%
309 \namedef{etoclink }##1{#1{#2}{#3}{##1}#5}%
310 \def\Etoc@getname ##1\relax\relax\etoc@{%
311 \@namedef{etocname }{\leavevmode #1{#2}{#3}{##1}#5\hspace}%
312 \def\etocthename{##1}%
313 }%
314 \def\Etoc@getnbr ##1##2##3\etoc@{%
315 \ifx ##1\numberline
316 \@namedef{etocnumber }{\leavevmode #1{#2}{#3}{##2}#5\hspace}%
317 \def\etocthenumber{##2}%
318 \Etoc@numbertrue
319 \Etoc@getname ##3\etoc@
320 \else
321 \@namedef{etocnumber }{\leavevmode\hspace}%
322 \def\etocthenumber{}%
323 \Etoc@numberfalse
324 \def\etocthename{#4}%
325 \fi}%
326 \Etoc@getnbr #4\relax\relax\etoc@
327 }

placeholder for comments

328 \def\Etoc@getit@nohyp #1\hspace#2#3\etoc@{%
329 \def\Etoc@getname ##1\hspace\relax\etoc@{%
330 \@namedef{etocname }{\leavevmode ##1\hspace}%
331 \def\etocthename{##1}%
332 }%
```

## 14. Implementation

```
333 \ifx\relax#2\else
334     \@namedef{etocnumber }{\leavevmode #1\hspace}%
335     \def\etocthenumber{#1}%
336     \Etoc@numbertrue
337     \Etoc@getname #3\etoc@
338 \fi
339 }

placeholder for comments
340 \def\Etoc@getit@hyp #1#2#3#4#5#6\etoc@{%
341     \def\Etoc@getname ##1\hspace\relax\etoc@{%
342         \@namedef{etocname }{\leavevmode #1{#2}{#3}{##1}#5\hspace}%
343         \def\etocthename{##1}%
344     }%
345     \def\Etoc@getnbr ##1\hspace##2##3\etoc@{%
346         \ifx\relax##2\else
347             \@namedef{etocnumber }{\leavevmode #1{#2}{#3}{##1}#5\hspace}%
348             \def\etocthenumber{##1}%
349             \Etoc@numbertrue
350             \Etoc@getname ##3\etoc@
351         \fi}%
352     \Etoc@getnbr #4\hspace\relax\etoc@}

placeholder for comments
353 \edef\etocpage{\noexpand\protect\expandafter
354     \noexpand\csname etocpage \endcsname}
355 \edef\etocname{\noexpand\protect\expandafter
356     \noexpand\csname etocname \endcsname}
357 \edef\etocnumber{\noexpand\protect\expandafter
358     \noexpand\csname etocnumber \endcsname}
359 \edef\etoclink{\noexpand\protect\expandafter
360     \noexpand\csname etoclink \endcsname}
361 \@namedef{etocifnumbered }{\ifEtoc@number
362     \expandafter\@firstoftwo\else\expandafter\@secondoftwo\fi}
363 \edef\etocifnumbered{\noexpand\protect\expandafter\noexpand
364     \csname etocifnumbered \endcsname}

placeholder for comments
365 \def\Etoc@readtoc#1{%
366     \ifeof #1
367         \let\Etoc@nextread\@gobble
368         \global\Etoc@toctoks=\expandafter{\the\Etoc@toctoks}%
369     \else
370         \let\Etoc@nextread\Etoc@readtoc
371         \read #1 to \Etoc@buffer
372         \Etoc@toctoks=\expandafter\expandafter\expandafter
373             {\expandafter\the\expandafter\Etoc@toctoks\Etoc@buffer}%
374     \fi
375     \Etoc@nextread{#1}%
376 }
377 \IfFileExists{\jobname .toc}
378     {{\endlinechar=-1 \makeatletter
379         \newread\Etoc@tf
380         \openin\Etoc@tf\@filef@und
```

## 14. Implementation

```
381          \Etoc@readtoc\Etoc@tf
382          \closein\Etoc@tf}}{\typeout{No file \jobname .toc.}}
placeholder for comments
383 \def\Etoc@starttoc{%
384 \begingroup
385 \makeatletter
386 \ifEtoc@hyperref
387   \ifx\hyper@last\@undefined
388   \ltx@ifpackageloaded {parskip}{\parskip \z@ }{}%
389   \IfFileExists {\jobname .toc}
390   {\Hy@WarningNoLine
391    {old toc file detected, not used; run LaTeX again (cheers from etoc)}}%
392   \global\Etoc@toctoks={}
393 {} \fi \fi
394 \if@filesw \newwrite \tf@toc
395 \immediate \openout \tf@toc \jobname .toc \relax \fi \@nobreakfalse
396 \endgroup}
placeholder for comments
397 \def\Etoc@toctoc{%
398   \global\Etoc@vfalse
399   \global\Etoc@ivfalse
400   \global\Etoc@iiifalse
401   \global\Etoc@iifalse
402   \global\Etoc@ifalse
403   \global\Etoc@false
404   \global\Etoc@jfalse
405   \global\Etoc@jjfalse
406 \ifEtoc@standard
407   \etoc@setstyle{@minustwo}{}{}{}{}%
408   \etoc@setstyle{@minusone}{}{}{}{}%
409   \etoc@setstyle{@zero}{}{}{}{}%
410   \etoc@setstyle{@one}{}{}{}{}%
411   \etoc@setstyle{@two}{}{}{}{}%
412   \etoc@setstyle{@three}{}{}{}{}%
413   \etoc@setstyle{@four}{}{}{}{}%
414   \etoc@setstyle{@five}{}{}{}{}%
415 \else
416   \def\Etoc@levellist@elt##1{\let##1\Etoc@lxyz}%
417   \Etoc@levellist
418   \let\booknumberline\numberline
419   \let\partnumberline\numberline
420   \let\chapternumberline\numberline
421 \fi
422 \the\Etoc@toctoks
423 \ifEtoc@notactive\else
424   \ifEtoc@v \Etoc@end@five\fi
425   \ifEtoc@iv \Etoc@end@four\fi
426   \ifEtoc@iii \Etoc@end@three\fi
427   \ifEtoc@ii \Etoc@end@two\fi
428   \ifEtoc@i \Etoc@end@one\fi
429   \ifEtoc@ \Etoc@end@zero\fi
```

## 14. Implementation

```

430 \ifEtoc@j \Etoc@end@minusone\fi
431 \ifEtoc@jj \Etoc@end@minustwo\fi
432 \fi}

placeholder for comments
433 \def\etoc@@startlocaltoc#1#2{%
434 \let\Etoc@next\relax
435 \ifEtoc@localtoc
436 \ifEtoc@notactive
437 \ifnum #1=#2\relax
438 \ifEtoc@jj \let\Etoc@localtop\Etoc@@minusone@@ \fi
439 \ifEtoc@j \let\Etoc@localtop\Etoc@@zero@@ \fi
440 \ifEtoc@ \let\Etoc@localtop\Etoc@@one@@ \fi
441 \ifEtoc@i \let\Etoc@localtop\Etoc@@two@@ \fi
442 \ifEtoc@ii \let\Etoc@localtop\Etoc@@three@@ \fi
443 \ifEtoc@iii \let\Etoc@localtop\Etoc@@four@@ \fi
444 \ifEtoc@iv \let\Etoc@localtop\Etoc@@five@@ \fi
445 \ifEtoc@v \let\Etoc@localtop\Etoc@@six@@ \fi
446 \def\Etoc@next{\global\Etoc@notactivefalse
447 \global\Etoc@vfalse
448 \global\Etoc@ivfalse
449 \global\Etoc@iiifalse
450 \global\Etoc@iifalse
451 \global\Etoc@ifalse
452 \global\Etoc@false
453 \global\Etoc@jfalse
454 \global\Etoc@jjfalse}%
455 \fi
456 \fi\fi
457 \Etoc@next}
458 \let\etoc@startlocaltoc\@gobble

placeholder for comments
459 \def\Etoc@localtableofcontents#1{%
460 \edef\Etoc@tmp{#1}%
461 \ifnum\Etoc@tmp<\@ne
462 \PackageWarning{etoc}
463 {Unknown toc id: run LaTeX to get references right}%
464 \leavevmode --unknown etoc ref: run latex again--\par
465 \let\Etoc@next\@gobble\else\let\Etoc@next\@firstofone\fi
466 \Etoc@next
467 {\edef\etoc@startlocaltoc##1{%
468 \noexpand\etoc@@startlocaltoc{##1}{#1}}
469 \Etoc@localtoctrue
470 \let\Etoc@localtop\Etoc@@minustwo@@
471 \global\Etoc@stoptocfalse
472 \global\Etoc@notactivetrue
473 \Etoc@tableofcontents}%
474 \endgroup\ifEtoc@mustclosegroup\expandafter\endgroup\fi}

placeholder for comments
475 \def\Etoc@getrefno #1#2\etoc@{#1}
476 \def\Etoc@getref #1{\@ifundefined{r@#1}{0}{\expandafter\expandafter\expandafter
477 \Etoc@getrefno\csname r@#1\endcsname\relax\etoc@}}

```

## 14. Implementation

```

478 \def\Etoc@ref#1{\Etoc@localtableofcontents{\Etoc@getref{#1}}}
479 \def\Etoc@label#1{\label{#1}%
480     \futurelet\Etoc@nexttoken\Etoc@t@bleofcontents}
481 {\def\1{\Etoc@again}\expandafter
482 \gdef\1 {\futurelet\Etoc@nexttoken\Etoc@t@bleofcontents}}

placeholder for comments
483 \def\Etoc@t@bleofcontents{%
484     \ifx\Etoc@nexttoken\label
485     \def\Etoc@next{\expandafter\Etoc@label\@gobble}\else
486     \ifx\Etoc@nexttoken\@sptoken
487     \let\Etoc@next\Etoc@again\else
488     \ifEtoc@tocwithid
489     \def\Etoc@next{\Etoc@localtableofcontents{\c@etoc@tocid}}%
490     \else
491     \ifx\Etoc@nexttoken\ref
492     \def\Etoc@next{\expandafter\Etoc@ref\@gobble}%
493     \else
494     \def\Etoc@next{\Etoc@localtocfalse
495         \global\Etoc@notactivefalse
496         \Etoc@tableofcontents
497         \endgroup
498         \ifEtoc@mustclosegroup\expandafter\endgroup\fi}%
499     \fi
500 \fi\fi\fi\Etoc@next}

placeholder for comments
501 \def\table@fcontents{%
502     \refstepcounter{etoc@tocid}%
503     \Etoc@tocwithidfalse
504     \futurelet\Etoc@nexttoken\Etoc@t@bleofcontents}
505 \def\localtable@fcontents{%
506     \refstepcounter{etoc@tocid}%
507     \addtocontents{toc}
508     {\string\etoc@startlocaltoc\string{\arabic{etoc@tocid}\string}}%
509     \Etoc@tocwithidtrue
510     \futurelet\Etoc@nexttoken\Etoc@t@bleofcontents}

placeholder for comments
511 \newcommand*\etocaftertitlehook{}
512 \newcommand*\etocaftercontentshook{}
513 \renewcommand*\tableofcontents{%
514     \ifEtoc@tocopenedforwrite\else\Etoc@starttoc\fi
515     \global\Etoc@tocopenedforwritetrue
516     \Etoc@par\begingroup
517     \def\etoc@startlocaltoc##1{\etoc@@startlocaltoc{##1}{\c@etoc@tocid}}%
518     \@ifstar
519     {\def\Etoc@aftertitlehook{}\table@fcontents}
520     {\let\Etoc@aftertitlehook\etocaftertitlehook\table@fcontents}}
521 \newcommand*\localtableofcontents{%
522     \ifEtoc@tocopenedforwrite\else\Etoc@starttoc\fi
523     \global\Etoc@tocopenedforwritetrue
524     \Etoc@par\begingroup\@ifstar
525     {\def\Etoc@aftertitlehook{}\localtable@fcontents}

```

## 14. Implementation

```

526 {\let\Etoc@aftertitlehook\etocaftertitlehook\localtable@fcontents}}
placeholder for comments
527 \newcommand\etocsettocstyle[2]{%
528 \def\Etoc@tableofcontents
529 {\ifnum\c@tocdepth>\Etoc@minf\let\Etoc@@next\@firstofone\else
530 \let\Etoc@@next\@gobble\fi
531 \Etoc@@next{#1\Etoc@aftertitlehook
532 \let\Etoc@savedcontentsline\contentsline
533 \let\contentsline\Etoc@etoccontentsline
534 \Etoc@toctoc
535 \let\Etoc@n@xt\relax
536 \ifEtoc@tocwithid\else
537 \ifEtoc@localtoc
538 \ifEtoc@notactive
539 \def\Etoc@n@xt{\Etoc@localtocfalse
540 \global\Etoc@notactivefalse
541 \Etoc@toctoc}%
542 \fi\fi\fi
543 \Etoc@n@xt
544 \etocaftercontentshook
545 #2}}}
placeholder for comments
546 \newcommand*\etocsetstyle{\Etoc@standardfalse\etoc@setstyle}
547 \long\def\etoc@setstyle#1#2#3#4#5{%
548 \long\expandafter\def
549 \csname Etoc@begin@\csname Etoc@#1@\endcsname\endcsname {#2}%
550 \long\expandafter\def
551 \csname Etoc@prefix@\csname Etoc@#1@\endcsname\endcsname {#3}%
552 \long\expandafter\def
553 \csname Etoc@contents@\csname Etoc@#1@\endcsname\endcsname {#4}%
554 \long\expandafter\def
555 \csname Etoc@end@\csname Etoc@#1@\endcsname\endcsname {#5}}
placeholder for comments
556 \newcommand*\etocfontminustwo{\normalfont \LARGE \bfseries}
557 \newcommand*\etocfontminusone{\normalfont \large \bfseries}
558 \newcommand*\etocfontzero{\normalfont \large \bfseries}
559 \newcommand*\etocfontone{\normalfont \normalsize \bfseries}
560 \newcommand*\etocfonttwo{\normalfont \normalsize}
561 \newcommand*\etocfontthree{\normalfont \footnotesize}
placeholder for comments
562 \newcommand*\etocsepminustwo{4ex \@plus .5ex \@minus .5ex}
563 \newcommand*\etocsepminusone{4ex \@plus .5ex \@minus .5ex}
564 \newcommand*\etocsepzero{2.5ex \@plus .4ex \@minus .4ex}
565 \newcommand*\etocseppone{1.5ex \@plus .3ex \@minus .3ex}
566 \newcommand*\etocseptwo{1ex \@plus .15ex \@minus .15ex}
567 \newcommand*\etocsepthree{.25ex \@plus .05ex \@minus .05ex}
placeholder for comments
568 \newcommand*\etocbaselinespreadminustwo{1}
569 \newcommand*\etocbaselinespreadminusone{1}
570 \newcommand*\etocbaselinespreadzero{1}

```

## 14. Implementation

```
571 \newcommand*\etocbaselinespreadone{1}
572 \newcommand*\etocbaselinespreadtwo{1}
573 \newcommand*\etocbaselinespreadthree{.9}

placeholder for comments
574 \newcommand*\etocminustwoleftmargin{1.5em plus 0.5fil}
575 \newcommand*\etocminustworightmargin{1.5em plus -0.5fil}
576 \newcommand*\etocminusoneleftmargin{1em}
577 \newcommand*\etocminusonerightmargin{1em}
578 \newcommand*\etoclineleaders
579     {\hbox{\normalfont\normalsize\hb@xt@2ex {\hss.\hss}}}
580 \newcommand*\etocabbrevpagename{p.~}
581 \newcommand*\etocpartname{\partname}
582 \newcommand*\etocbookname{Book}

placeholder for comments
583 \def\etoclines{\Etoc@standardfalse}

placeholder for comments
584 \etoc@setstyle{@minustwo}{\etocskipfirstprefix}{\pagebreak[3]}
585 {\begingroup \etocfontminustwo
586   \addvspace{\etocsepminustwo}%
587   \parindent \z@
588   \leftskip \etocminustwoleftmargin
589   \rightskip \etocminustworightmargin
590   \parfillskip \@flushglue
591   \vbox{\etocifnumbered{\etocbookname~\etocnumber:~}{ }\etocname
592     \baselineskip\etocbaselinespreadminustwo\baselineskip\par}%
593   \addvspace{\etocsepminusone}\nobreak
594 \endgroup}
595 {}%
596 \etoc@setstyle{@minusone}{\etocskipfirstprefix}{\pagebreak[3]}
597 {\begingroup \etocfontminusone
598   \addvspace{\etocsepminusone}%
599   \parindent \z@
600   \leftskip \etocminusoneleftmargin
601   \rightskip \etocminusonerightmargin
602   \parfillskip \@flushglue
603   \vbox{\etocpartname\etocifnumbered{ \etocnumber.~}{ }\etocname
604     \baselineskip\etocbaselinespreadminusone\baselineskip\par}%
605   \addvspace{\etocsepzero}\nobreak
606 \endgroup}
607 {}%
608 \etoc@setstyle{@zero}
609 {\addpenalty\@highpenalty\etocskipfirstprefix}{\pagebreak[2]}
610 {\begingroup
611   \etocfontzero
612   \addvspace{\etocsepzero}%
613   \parindent \z@ \parfillskip \@flushglue
614   \vbox{\etocifnumbered{\etocnumber\space}{ }\etocname
615     \baselineskip\etocbaselinespreadzero\baselineskip\par}%
616   \addvspace{\etocsepone}\addpenalty\@itempenalty
617 \endgroup}
618 {\addpenalty\@secpenalty}%
```



## 14. Implementation

```
placeholder for comments
619 \etoc@setstyle{@one}
620 {\addpenalty\@medpenalty\etocskipfirstprefix}\pagebreak[1]}
621 {\begingroup\etocfontone
622 \addvspace{\etocseppone}%
623 \parindent \z@ \parfillskip \z@
624 \setbox\z@\vbox{\parfillskip\@flushglue
625 \etocname\par\setbox\tw@\lastbox
626 \global\setbox\@ne\hbox{\unhbox\tw@}}}%
627 \dimen\z@=\wd\@ne
628 \setbox\z@=\etoclineleaders
629 \advance\dimen\z@\wd\z@
630 \etocifnumbered
631 {\setbox\tw@\hbox{\etocnumber, \etocabbrevpagename\etocpage}}
632 {\setbox\tw@\hbox{\etocabbrevpagename\etocpage}}}%
633 \advance\dimen\z@\wd\tw@
634 \ifdim\dimen\z@ < \linewidth
635     \vbox{\etocname\nobreak
636     \leaders\box\z@\hfil\box\tw@
637     \baselineskip\etocbaselinespreadone\baselineskip\par}
638 \else
639     \vbox{\etocname\nobreak
640     \ifdim\wd\@ne<\linewidth\leaders\copy\z@\hfil\break\fi
641     \hbox{} \leaders\box\z@\hfil\box\tw@
642     \baselineskip\etocbaselinespreadone\baselineskip\par}
643 \fi
644 \addvspace{\etocsepttwo}\addpenalty\@itempenalty
645 \endgroup}
646 {\addpenalty\@secpenalty}%
placeholder for comments
647 \etoc@setstyle{@two}
648 {\addpenalty\@medpenalty\etocskipfirstprefix}
649 {\pagebreak[1]}
650 {\begingroup\etocfonttwo
651 \addvspace{\etocsepttwo}%
652 \parindent \z@ \parfillskip \z@
653 \setbox\z@\vbox{\parfillskip\@flushglue
654 \etocname\par\setbox\tw@\lastbox
655 \global\setbox\@ne\hbox{\unhbox\tw@}}}%
656 \dimen\z@=\wd\@ne
657 \setbox\z@=\etoclineleaders
658 \advance\dimen\z@\wd\z@
659 \etocifnumbered
660 {\setbox\tw@\hbox{\etocnumber, \etocabbrevpagename\etocpage}}
661 {\setbox\tw@\hbox{\etocabbrevpagename\etocpage}}}%
662 \advance\dimen\z@\wd\tw@
663 \ifdim\dimen\z@ < \linewidth
664     \vbox{\etocname\nobreak
665     \leaders\box\z@\hfil\box\tw@
666     \baselineskip\etocbaselinespreadtwo\baselineskip\par}
667 \else
668     \vbox{\etocname\nobreak
```

## 14. Implementation

```

669      \ifdim\wd\@ne<\linewidth\leaders\copy\z@\hfil\break\fi
670      \hbox{}\leaders\box\z@\hfil\box\tw@
671      \baselineskip\etocbaselinespreadtwo\baselineskip\par}
672 \fi
673 \addvspace{\etocsepthree}\addpenalty\@itempenalty
674 \endgroup}
675 {\addpenalty\@secpenalty}%

placeholder for comments
676 \etoc@setstyle{@three}
677 {\nopagebreak
678 \etocfontthree
679 \addvspace{\etocsepthree}%
680 \nointerlineskip\noindent
681 \etocskipfirstprefix}
682 {\allowbreak\,--\,}
683 {\etocname\unskip} % \xspace in \etocname
684 {\hfil\beginingroup
685 \baselineskip\etocbaselinespreadthree\baselineskip
686 \par\endgroup
687 \addpenalty{-\@highpenalty}}%

placeholder for comments
688 \etoc@setstyle{@four}{}{}{}{}%
689 \etoc@setstyle{@five}{}{}{}{}%
690 }

placeholder for comments
691 \newcommand*\etocabovetocskip{3.5ex \@plus 1ex \@minus .2ex}
692 \newcommand*\etocbelowtocskip{3.5ex \@plus 1ex \@minus .2ex}
693 \newcommand*\etoccolumnsep{2em}
694 \newcommand*\etocmulticolsep{0ex}
695 \newcommand*\etocmulticolpretolerance{-1}
696 \newcommand*\etocmulticoltolerance{200}
697 \newcommand*\etocdefaultnbcol{2}
698 \newcommand*\etocinnertopsep{2ex}

placeholder for comments
699 \newcommand\etocmulticolstyle[2][\etocdefaultnbcol]{%
700 \etocsettocstyle
701   {\let\etocoldpar\par
702     \addvspace{\etocabovetocskip}%
703     \ifnum #1>\@ne\let\Etoc@next\@firstoftwo
704       \else \let\Etoc@next\@secondoftwo\fi
705     \Etoc@next{%
706       \multicolpretolerance\etocmulticolpretolerance
707       \multicoltolerance\etocmulticoltolerance
708       \setlength{\columnsep}{\etoccolumnsep}%
709       \setlength{\multicolsep}{\etocmulticolsep}%
710       \begin{multicols}{#1}[#2\etocoldpar\addvspace{\etocinnertopsep}]}
711 % 2013/01/29: erroneous \etocsepminusone at last replaced by \etocinnertopsep
712 % and definition of \etocoldpar added as multicols chokes on \par as part of #2
713     {#2\par\addvspace{\etocinnertopsep}%
714       \pretolerance\etocmulticolpretolerance

```

## 14. Implementation

```

715     \tolerance\etocmulticoltolerance}}
716 {\ifnum #1>\@ne\let\Etoc@next\@firstofone
717     \else \let\Etoc@next\@gobble\fi
718     \Etoc@next{\end{multicols}}}%
719     \addvspace{\etocbelowtocskip}}}

placeholder for comments
720 \newcommand*\etocinnerbottomsep{3.5ex}
721 \newcommand*\etocinnerleftsep{2em}
722 \newcommand*\etocinnerrightsep{2em}
723 \newcommand*\etoctoprule{\hrule}
724 \newcommand*\etocleftrule{\vrule}
725 \newcommand*\etocrightrule{\vrule}
726 \newcommand*\etocbottomrule{\hrule}
727 \newcommand*\etoctoprulecolorcmd{\relax}
728 \newcommand*\etocbottomrulecolorcmd{\relax}
729 \newcommand*\etocleftrulecolorcmd{\relax}
730 \newcommand*\etocrightrulecolorcmd{\relax}

placeholder for comments
731 \def\etoc@ruledheading #1{%
732     \hb@xt@\linewidth{\color@begingroup
733         \hss #1\hss\hskip-\linewidth
734         \etoctoprulecolorcmd\leaders\etoctoprule\hss
735         \phantom{#1}%
736         \leaders\etoctoprule\hss\color@endgroup}%
737     \nointerlineskip\vskip\etocinnertopsep}

placeholder for comments
738 \newcommand*\etocruledstyle[2][\etocdefaultnbcoll]{%
739 \etocsettocstyle
740     {\addvspace{\etocabovetocskip}}%
741     \ifnum #1>\@ne\let\Etoc@next\@firstoftwo
742     \else \let\Etoc@next\@secondoftwo\fi
743     \Etoc@next
744     {\multicolpretolerance\etocmulticolpretolerance
745     \multicoltolerance\etocmulticoltolerance
746     \setlength{\columnsep}{\etoccolumnsep}%
747     \setlength{\multicolsep}{\etocmulticolsep}%
748     \begin{multicols}{#1}[\etoc@ruledheading{#2}]}
749     {\etoc@ruledheading{#2}\nobreak
750     \pretolerance\etocmulticolpretolerance
751     \tolerance\etocmulticoltolerance}}
752 {\ifnum #1>\@ne\let\Etoc@next\@firstofone
753     \else \let\Etoc@next\@gobble\fi
754     \Etoc@next{\end{multicols}}}%
755     \addvspace{\etocbelowtocskip}}}

placeholder for comments
756 \newcommand\etocframedmphook{\relax}
757 \newcommand*\etocbkgcolorcmd{\relax}
758 \def\Etoc@relax{\relax}
759 \newbox\etoc@framed@titlebox
760 \newbox\etoc@framed@contentsbox

```

## 14. Implementation

```

761 \newcommand*\etocframedstyle[2][\etocdefaultnbcoll]{%
762 \etocsettocstyle{%
763   \addvspace{\etocabovetocskip}%
764   \sbox\z@{\#2}%
765   \dimen\z@\dp\z@
766   \ifdim\wd\z@<\linewidth \dp\z@\z@ \else \dimen\z@\z@ \fi
767   \setbox\etoc@framed@titlebox=\hb@xt@\linewidth{\color@begingroup
768     \hss
769     \ifx\etocbkgcolorcmd\Etoc@relax\else
770       \sbox\tw@\{\color{white}%
771       \vrule\@width\wd\z@\@height\ht\z@\@depth\dimen\z@}%
772       \ifdim\wd\z@<\linewidth \dp\tw@\z@\fi
773       \box\tw@
774       \hskip-\wd\z@
775     \fi
776     \copy\z@
777     \hss
778     \hskip-\linewidth
779     \etocoprulcolorcmd\leaders\etocoprul\hss%
780     \hskip\wd\z@
781     \etocoprulcolorcmd\leaders\etocoprul\hss\color@endgroup}%
782   \setbox\z@\hbox{\etoclefrule\etocrightrule}%
783   \dimen\tw@\linewidth\advance\dimen\tw@-\wd\z@
784   \advance\dimen\tw@-\etocinnerleftsep
785   \advance\dimen\tw@-\etocinnerrightsep
786   \setbox\etoc@framed@contentsbox=\vbox\bgroup
787     \hsize\dimen\tw@
788     \kern\dimen\z@
789     \vskip\etocinnertopsep
790     \hbox\bgroup
791     \begin{minipage}{\hsize}%
792     \etocframedmphook
793     \ifnum #1>\@ne\let\Etoc@next\@firstoftwo
794     \else \let\Etoc@next\@secondoftwo\fi
795     \Etoc@next
796     {\multicolpretolerance\etocmulticolpretolerance
797     \multicoltolerance\etocmulticoltolerance
798     \setlength{\columnsep}{\etoccolumnsep}%
799     \setlength{\multicolsep}{\etocmulticolsep}%
800     \begin{multicols}{#1}}
801     {\pretolerance\etocmulticolpretolerance
802     \tolerance\etocmulticoltolerance}}
803     {\ifnum #1>\@ne\let\Etoc@next\@firstofone
804     \else \let\Etoc@next\@gobble\fi
805     \Etoc@next\end{multicols}\unskip}%
806   \end{minipage}%
807   \egroup
808   \vskip\etocinnerbottomsep
809   \egroup
810   \vbox{\hsize\linewidth
811     \ifx\etocbkgcolorcmd\Etoc@relax\else
812     \kern\ht\etoc@framed@titlebox

```

## 14. Implementation

```

813      \kern\dp\etoc@framed@titlebox
814      \hb@xt@\linewidth{\color@begingroup
815      \etocleftrulecolorcmd\etocleftrule
816      \etocbkgcolorcmd
817      \leaders\vrule
818      \@height\ht\etoc@framed@contentsbox
819      \@depth\dp\etoc@framed@contentsbox
820      \hss
821      \etocrightrulecolorcmd\etocrightrule
822      \color@endgroup}\nointerlineskip
823      \vskip-\dp\etoc@framed@contentsbox
824      \vskip-\ht\etoc@framed@contentsbox
825      \vskip-\dp\etoc@framed@titlebox
826      \vskip-\ht\etoc@framed@titlebox
827      \fi
828      \box\etoc@framed@titlebox\nointerlineskip
829      \hb@xt@\linewidth{\color@begingroup
830      {\etocleftrulecolorcmd\etocleftrule}%
831      \hss\box\etoc@framed@contentsbox\hss
832      \etocrightrulecolorcmd\etocrightrule\color@endgroup}
833      \nointerlineskip
834      \vskip\ht\etoc@framed@contentsbox
835      \vskip\dp\etoc@framed@contentsbox
836      \hb@xt@\linewidth{\color@begingroup\etocbottomrulecolorcmd
837      \leaders\etocbottomrule\hss\color@endgroup}}
838      \addvspace{\etocbelowtocskip}}
placeholder for comments
839 \newcommand\etoc@multicoltoc[2][\etocdefaultnbcol]{%
840   \etocmulticolstyle[#1]{#2}%
841   \tableofcontents}
842 \newcommand\etoc@multicoltoi[2][\etocdefaultnbcol]{%
843   \etocmulticolstyle[#1]{#2}%
844   \tableofcontents*}
845 \newcommand\etoc@local@multicoltoc[2][\etocdefaultnbcol]{%
846   \etocmulticolstyle[#1]{#2}%
847   \localtableofcontents}
848 \newcommand\etoc@local@multicoltoi[2][\etocdefaultnbcol]{%
849   \etocmulticolstyle[#1]{#2}%
850   \localtableofcontents*}
placeholder for comments
851 \newcommand*\etoc@ruledtoc[2][\etocdefaultnbcol]{%
852   \etocruledstyle[#1]{#2}%
853   \tableofcontents}
854 \newcommand*\etoc@ruledtoi[2][\etocdefaultnbcol]{%
855   \etocruledstyle[#1]{#2}%
856   \tableofcontents*}
857 \newcommand*\etoc@local@ruledtoc[2][\etocdefaultnbcol]{%
858   \etocruledstyle[#1]{#2}%
859   \localtableofcontents}
860 \newcommand*\etoc@local@ruledtoi[2][\etocdefaultnbcol]{%
861   \etocruledstyle[#1]{#2}%

```

## 14. Implementation

```
862 \localtableofcontents*}
placeholder for comments
863 \newcommand*\etoc@framedtoc[2][\etocdefaultnbcol]{%
864 \etocframedstyle[#1]{#2}%
865 \tableofcontents}
866 \newcommand*\etoc@framedtoci[2][\etocdefaultnbcol]{%
867 \etocframedstyle[#1]{#2}%
868 \tableofcontents*}
869 \newcommand*\etoc@local@framedtoc[2][\etocdefaultnbcol]{%
870 \etocframedstyle[#1]{#2}%
871 \localtableofcontents}
872 \newcommand*\etoc@local@framedtoci[2][\etocdefaultnbcol]{%
873 \etocframedstyle[#1]{#2}%
874 \localtableofcontents*}
placeholder for comments
875 \def\etocmulticol{\begingroup
876 \Etoc@mustclosegrouptrue
877 \@ifstar
878 {\etoc@multicoltoctoci}
879 {\etoc@multicoltoctoc}}
880 \def\etocruled{\begingroup
881 \Etoc@mustclosegrouptrue
882 \@ifstar
883 {\etoc@ruledtoctoci}
884 {\etoc@ruledtoctoc}}
885 \def\etocframed{\begingroup
886 \Etoc@mustclosegrouptrue
887 \@ifstar
888 {\etoc@framedtoctoci}
889 {\etoc@framedtoctoc}}
890 \def\etoclocalmulticol{\begingroup
891 \Etoc@mustclosegrouptrue
892 \@ifstar
893 {\etoc@local@multicoltoctoci}
894 {\etoc@local@multicoltoctoc}}
895 \def\etoclocalruled{\begingroup
896 \Etoc@mustclosegrouptrue
897 \@ifstar
898 {\etoc@local@ruledtoctoci}
899 {\etoc@local@ruledtoctoc}}
900 \def\etoclocalframed{\begingroup
901 \Etoc@mustclosegrouptrue
902 \@ifstar
903 {\etoc@local@framedtoctoci}
904 {\etoc@local@framedtoctoc}}
placeholder for comments
905 \def\etocarticlestyle{%
906 \etocsettocstyle
907 {\section *{\contentsname
908 \mkboth {\MakeUppercase \contentsname}
909 {\MakeUppercase \contentsname}}}
```

## 14. Implementation

```

910 {}
911 \def\etocarticlestylenomarks{%
912   \etocsettocstyle
913   {\section *{\contentsname}}
914   {}
  placeholder for comments
915 \def\etocbookstyle{%
916   \etocsettocstyle
917   {\if@twocolumn \@restonecoltrue \onecolumn \else \@restonecolfalse \fi
918    \chapter *{\contentsname
919     \mkboth {\MakeUppercase \contentsname}
920     {\MakeUppercase \contentsname}}}
921   {\if@restonecol \twocolumn \fi}}
922 \def\etocbookstylenomarks{%
923   \etocsettocstyle
924   {\if@twocolumn \@restonecoltrue \onecolumn \else \@restonecolfalse \fi
925    \chapter *{\contentsname}}
926   {\if@restonecol \twocolumn \fi}}
927 \let\etocreportstyle\etocbookstyle
928 \let\etocreportstylenomarks\etocbookstylenomarks
929 \def\etocmemoirtocformat #1#2{%
930   \def\Etoc@addsuitablecontentsline{\addcontentsline {toc}{#1}{#2}}%
931   \renewcommand*\etocaftertitlehook{%
932     \ifmem@em@starred@listof
933     \else\phantomsection\aftergroup\Etoc@addsuitablecontentsline\fi}}
934 \def\etocmemoirstyle{%
935   \etocsettocstyle
936   {\ensureonecol \par \begingroup \@nameuse {@tocmaketitle}
937    \Etoc@aftertitlehook\let\Etoc@aftertitlehook\relax
938    \parskip \cftparskip \@nameuse {cfttocbeforelisthook}}
939   {\@nameuse {cfttocafterlisthook}\endgroup\restorefromonecol}}
  placeholder for comments
940 \def\etocscrartclstyle{%
941   \etocsettocstyle
942   {\let\if@dynlist\if@tocleft
943    \iftocfeature {toc}{onecolumn}
944    {\iftocfeature {toc}{leveldown}
945     {}
946     {\if@twocolumn \aftergroup \twocolumn \onecolumn \fi }}
947    {}%
948    \tocbasic@listhead {\listoftocname}%
949    \begingroup \expandafter \expandafter \expandafter
950    \endgroup \expandafter
951    \ifx
952    \csname microtypesetup\endcsname \relax
953    \else
954    \iftocfeature {toc}{noprotrusion}{}
955     {\microtypesetup {protrusion=false}%
956      \PackageInfo {tocbasic}%
957      {character protrusion at toc deactivated}}%
958    \fi

```

## 14. Implementation

```

959      \setlength {\parskip }{\z@ }%
960      \setlength {\parindent }{\z@ }%
961      \setlength {\parfillskip }{\z@ \@plus 1fil}%
962      \csname tocbasic@@before@hook\endcsname
963      \csname tb@toc@before@hook\endcsname}
964      {\csname tb@toc@after@hook\endcsname
965      \csname tocbasic@@after@hook\endcsname}}
966 \let\etocscrbookstyle\etocscrartclstyle
967 \let\etocscrreprtstyle\etocscrartclstyle

placeholder for comments
968 \newcommand*\etocstandarddisplaystyle{\etocarticlestyle}
969 \newcommand*\etocmarkboth[1]{%
970   \mkboth{\MakeUppercase{#1}}{\MakeUppercase{#1}}}
971 \newcommand*\etocmarkbothnouc[1]{\mkboth{#1}{#1}}
972 \newcommand\etocstyle[3][section]{\etocmulticolstyle[#2]%
973   {\csname #1\endcsname *{#3}}}
974 \newcommand\etocstylewithmarks[4][section]{\etocmulticolstyle[#2]%
975   {\csname #1\endcsname *{#3}\etocmarkboth{#4}}}%
976 \newcommand\etocstylewithmarksnouc[4][section]{\etocmulticolstyle[#2]%
977   {\csname #1\endcsname *{#3}\etocmarkbothnouc{#4}}}%

placeholder for comments
978 \def\Etoc@redefetocstyle#1{%
979   \renewcommand\etocstylewithmarks[4][#1]
980   {\etocmulticolstyle[##2]%
981     {\csname ##1\endcsname *{##3}\etocmarkboth{##4}}}%
982   \renewcommand\etocstylewithmarksnouc[4][#1]
983   {\etocmulticolstyle[##2]%
984     {\csname ##1\endcsname *{##3}\etocmarkbothnouc{##4}}}%
985   \renewcommand\etocstyle[3][#1]{%
986     \etocmulticolstyle[##2]{\csname ##1\endcsname *{##3}}}%
987 \@ifclassloaded{scrartcl}
988   {\renewcommand*\etocstandarddisplaystyle{\etocscrartclstyle}}{}
989 \@ifclassloaded{book}
990   {\renewcommand*\etocfontone{\normalfont\normalsize}
991     \renewcommand*\etocstandarddisplaystyle{\etocbookstyle}
992     \Etoc@redefetocstyle{chapter}}{}
993 \@ifclassloaded{report}
994   {\renewcommand*\etocfontone{\normalfont\normalsize}
995     \renewcommand*\etocstandarddisplaystyle{\etocreportstyle}
996     \Etoc@redefetocstyle{chapter}}{}
997 \@ifclassloaded{scrbook}
998   {\renewcommand*\etocfontone{\normalfont\normalsize}
999     \renewcommand*\etocstandarddisplaystyle{\etocscrbookstyle}
1000     \Etoc@redefetocstyle{chapter}}{}
1001 \@ifclassloaded{scrreprt}
1002   {\renewcommand*\etocfontone{\normalfont\normalsize}
1003     \renewcommand*\etocstandarddisplaystyle{\etocscrreprtstyle}
1004     \Etoc@redefetocstyle{chapter}}{}
1005 \@ifclassloaded{memoir}
1006   {\renewcommand*\etocfontone{\normalfont\normalsize}
1007     \etocmemoirtotocfmt{chapter}{\contentsname}%

```



## 14. Implementation

```
1008 \renewcommand*\etocstandarddisplaystyle{\etocmemoirstyle}
1009 \Etoc@redefetocstyle{chapter}}{}
placeholder for comments
1010 \newcommand*\etocstandardlines{\Etoc@standardtrue}
1011 %
1012 \def\Etoc@addtocontents #1#2%
1013   {\ifEtoc@hyperref
1014     \addtocontents {toc}{\protect\contentsline
1015       {#1}{#2}%
1016       {\thepage }{\@currentHref }}}%
1017   \else
1018     \addtocontents {toc}{\protect\contentsline
1019       {#1}{#2}{\thepage }}}%
1020   \fi}
1021 \def\Etoc@addcontentsline@ #1#2#3%
1022   {\@namedef{toclevel@#1}{#3}%
1023     \addcontentsline {toc}{#1}{#2}}
1024 \DeclareRobustCommand*\etoccontentsline{
1025   {\@ifstar{\Etoc@addcontentsline@}{\Etoc@addtocontents}}
1026 %
1027 \etoclines
1028 \AtBeginDocument{
1029 \etocstandardlines
1030 \etocstandarddisplaystyle}
1031 \endinput
```