# NTG Document Classes for LATEX version $2e^*$

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# 1 Introduction

This file contains the set of document classes that were made available by Working Group 13 of the NTG (Nederlandstalige TEX Gebruikersgroep). They are compatible with the standard LATEX2e document classes, but implement different layouts.

# 2 The DOCSTRIP modules

The following modules are used in the implementation to direct DOCSTRIP in generating the external files:

produce the document classes artikel?
produce the document classes rapport?
produce the class option for 10pt
produce the class option for 11pt
produce the class option for 12pt
produce the document classes book?
produce the '1' variants of the classes
produce the '2' variants of the classes
produce the '3' variants of the classes
produce a documentation driver file

# 3 Initial Code

In this part we define a few commands that are used later on.

\*\*Optsize This control sequence is used to store the second digit of the pointsize we are typesetting in. So, normally, it's value is one of 0, 1 or 2.

```
_1 \langle *artikel \mid rapport \mid boek \rangle
```

2 \newcommand\*\@ptsize{}

3

\if@restonecol

When the document has to printed in two columns, we sometimes have to temporarily switch to one column. This switch is used to remember to switch back.

4 \newif\if@restonecol

\if@titlepage

A switch to indicate if a titlepage has to be produced. For the artikel document class the default is not to make a seperate titlepage.

- 5 \newif\if@titlepage
- ${\small 6}\ \langle {\it artikel}\rangle \backslash {\it @titlepagefalse}\\$
- $7 \langle !artikel \rangle \setminus @titlepagetrue$

\if@openright A switch to indicate if chapters must start on a right-hand page. The default for the report class is no; for the book class it's yes.

8 (!artikel) \newif \if@openright

\if@mainmatter

The switch \if@mainmatter, only available in the document class book, indicates whether we are processing the main material in the book.

9 (boek) \newif\if@mainmatter \@mainmattertrue

\if@oldtoc

A switch to indicate if 'old' layout of the table of contents should be produced. These document classes normally produce a table of contents that looks quite different from what the standard classes produce.

10 \newif\if@oldtoc
11 \@oldtocfalse

\if@allcaps

By default the text on the titlepage is set in capital letters. This can be disabled by the option mctitle, which sets the switch \if@allcaps to false.

12 \newif\if@allcaps

\if@titlecentered

In the document classes artikel3 and rapport3 the default placement of the title that is produced by \maketitle is flushleft. This can be changed by the switch \ifOtitlecentered.

13  $\langle type3 \rangle \setminus f(0)$  14  $\langle type3 \rangle \setminus f(0)$  15  $\langle type3 \rangle \setminus f(0)$  16  $\langle type3 \rangle \setminus f(0)$  17  $\langle type3 \rangle \setminus f(0)$  18  $\langle type3 \rangle \setminus f(0)$  19  $\langle type3 \rangle \setminus f(0)$ 

\if@revlabel

These document classes need to be able to change the positioning of the label in labeled lists. This switch is used for that purpose.

15 \newif\if@revlabel

# 4 Declaration of Options

# 4.1 Setting Paper Sizes

The variables \paperwidth and \paperheight should reflect the physical paper size after trimming. For desk printer output this is usually the real paper size since there is no post-processing. Classes for real book production will probably add other paper sizes and additionally the production of crop marks for trimming.

```
16 \DeclareOption{a4paper}
     {\setlength\paperheight {297mm}%
      \setlength\paperwidth {210mm}}
19 \DeclareOption{a5paper}
     {\setlength\paperheight {210mm}%
20
      \setlength\paperwidth {148mm}}
21
22 \DeclareOption\{b5paper\}
23
     {\setlength\paperheight {250mm}%
24
      \setlength\paperwidth {176mm}}
25 \DeclareOption{letterpaper}
     {\setlength\paperheight {11in}%
      \setlength\paperwidth {8.5in}}
28 \DeclareOption{legalpaper}
     {\setlength\paperheight {14in}%
      \setlength\paperwidth {8.5in}}
30
```

The option landscape switches the values of \paperheight and \paperwidth, assuming the dimensions wer given for portrait paper.

```
34 \DeclareOption{landscape}
35 {\setlength\@tempdima {\paperheight}%
36 \setlength\paperheight {\paperwidth}%
37 \setlength\paperwidth {\@tempdima}}
```

# 4.2 Choosing the type size

The type size options are handled by defining \@ptsize to contain the last digit of the size in question and branching on \ifcase statements. This is done for historical reasons to stay compatible with other packages that use the \@ptsize variable to select special actions. It makes the declarations of size options less than 10pt difficult, although one can probably use 9 and 8 assuming that a class wont define both 8pt and 18pt options.

```
 \begin{tabular}{$38 \end{tabular} $$ \end{tabular} {\end{tabular} $$ \end{tabular} $$ \e
```

# 4.3 Two-side or one-side printing

For two-sided printing we use the switch \if@twoside. In addition we have to set the \if@mparswitch to get any margin paragraphs into the outside margin.

# 4.4 Draft option

If the user requests draft we show any overfull boxes. We could probably add some more interesting stuff to this option.

```
43 \DeclareOption{draft}{\setlength\overfullrule{5pt}}
44 \DeclareOption{final}{\setlength\overfullrule{0pt}}
```

# 4.5 Titlepage option

An article usually has no separate titlepage, but the user can request one.

```
45 \ensuremath{\color=0ption{titlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color=0ption{notitlepage}{\color
```

# 4.6 openright option

This option determines whether or not a chapter must start on a right-hand page request one.

```
47 \langle |artike| \rangle DeclareOption{openright} \{\@openrighttrue\} 48 \langle |artike| \rangle DeclareOption{openany} \{\@openrightfalse\}
```

For these document classes there used to be a file voorwerk.sty which was a replacement for titlepag.sty. Therefore we also have the option voorwerk.

- 49 \DeclareOption{voorwerk}{\@titlepagetrue}
- 50 \DeclareOption{geenvoorwerk}{\@titlepagefalse}

# 4.7 Table of contents formatting

This document class uses a new layout for the table of contents, but in order to maintain compatibility with the standard  $\LaTeX 2_{\mathcal{E}}$  document classes we supply an extra option: oldtoc. If this option is specified the switch if@oldtoc will be set true.

51 \DeclareOption{oldtoc}{\@oldtoctrue}

# 4.8 Formatting of the title

The option titlecentered changes the behaviour of the \maketitle command. It then produces a title like it does for the artikel1 document class.

52 \type3 \DeclareOption{titlecentered} {\@titlecenteredtrue}

In the rapport and book document styles the titlepage uses all capital letters. The option mctitle (for 'mixed case') prevents this.

- $53 \langle rapport \mid boek \rangle \setminus DeclareOption\{mctitle\}\{\setminus @allcapsfalse\}$
- 54 (rapport | boek) \DeclareOption{uctitle}{\@allcapstrue}

# 4.9 Twocolumn printing

Two-column and one-column printing is again realized via a switch.

- 55 \DeclareOption{onecolumn}{\@twocolumnfalse}
- 56 \DeclareOption{twocolumn}{\@twocolumntrue}

# 4.10 Equation numbering on the left

The option leqno can be used to get the equation numbers on the left side of the equation. It loads code which is generated automatically from the kernel files when the format is built. If the equation number does get a special formatting then instead of using the kernel file the class would need to provide the code explicitly.

57 \DeclareOption{leqno}{\input{leqno.clo}}

# 4.11 Flush left displays

The option fleqn redefines the displayed math environments in such a way that they come out flush left, with an indentation of \mathindent from the prevailing left margin. It loads code which is generated automatically from the kernel files when the format is built.

58 \DeclareOption{fleqn}{\input{fleqn.clo}}

# 4.12 Open bibliography

The option openbib produces the "open" bibliography style, in which each block starts on a new line, and succeeding lines in a block are indented by \bibindent.

```
59 \DeclareOption{openbib}{%
```

First some hook into the bibliography environment is filled.

```
\AtEndOfPackage{%
     \renewcommand\@openbib@code{%
61
        \advance\leftmargin\bibindent
62
63
        \itemindent -\bibindent
64
        \listparindent \itemindent
65
        \parsep \z@
       }%
66
In addition the definition of \newblock is overwritten.
     \renewcommand\newblock{\par}}%
68 }
```

# 5 Executing Options

Here we execute the default options to initialize certain variables. Note that the document class 'boek' always uses two sided printing.

The \ProcessOptions command causes the execution of the code for every option FOO which is declared and for which the user typed the FOO option in his \documentclass command. For every option BAR he typed, which is not declared, the option is assumed to be a global option. All options will be passed as document options to any \usepackage command in the document preamble.

```
78 \ProcessOptions
```

Now that all the options have been executed we can load the chosen class option file that contains all size dependent code.

```
79 \input{ntg1\@ptsize.clo} 80 \langle \text{/artikel} \mid \text{rapport} \mid \text{boek} \rangle
```

# 6 Loading Packages

These class files do not load additional packages.

# 7 Document Layout

In this section we are finally dealing with the nasty typographical details.

#### **7.1** Fonts

IFTEX offers the user commands to change the size of the font, relative to the 'main' size. Each relative size changing command \size executes the command \@setfontsize\size\font-size\\ \(baselineskip\)\ where:

 $\langle font\text{-}size \rangle$  The absolute size of the font to use from now on.

⟨baselineskip⟩ The normal value of \baselineskip for the size of the font selected. (The actual value will be \baselinestretch \* ⟨baselineskip⟩.)

A number of commands, defined in the LATEX kernel, shorten the following definitions and are used throughout. They are:

\@vpt	5	\@vipt	6	\@viipt	7
\@viiipt	8	\@ixpt	9	\@xpt	10
\@xipt	10.95	\@xiipt	12	\@xivpt	14.4

\normalsize

The user level command for the main size is \normalsize. Internally IATEX uses \Onormalsize when it refers to the main size. \Onormalsize will be defined to work like \normalsize if the latter is redefined from its default definition (that just issues an error message). Otherwise \Onormalsize simply selects a 10pt/12pt size.

The \normalsize macro also sets new values for \abovedisplayskip, \abovedisplayshortskip and

```
81 (*10pt | 11pt | 12pt)
82 \renewcommand\normalsize{%
83 (*10pt)
      \@setfontsize\normalsize\@xpt\@xiipt
84
85
      \abovedisplayskip 10\p@ \@plus2\p@ \@minus5\p@
86
      \abovedisplayshortskip \z@ \@plus3\p@
      \belowdisplayshortskip 6\p@ \@plus3\p@ \@minus3\p@
88 (/10pt)
89 (*11pt)
90
      \@setfontsize\normalsize\@xipt{13.6}%
      \abovedisplayskip 11\p@ \@plus3\p@ \@minus6\p@
91
      \abovedisplayshortskip \z@ \@plus3\p@
92
      \below displays hortskip 6.5\p0 \0plus 3.5\p0 \0minus 3\p0
93
94 (/11pt)
95 (*12pt)
      \@setfontsize\normalsize\@xiipt{14.5}%
96
      \abovedisplayskip 12\p@ \@plus3\p@ \@minus7\p@
      \abovedisplayshortskip \z@ \@plus3\p@
      \belowdisplayshortskip 6.5\p@ \@plus3.5\p@ \@minus3\p@
100 (/12pt)
```

The \belowdisplayskip is always equal to the \abovedisplayskip. The parameters of the first level list are always given by \ClistI.

```
101 \belowdisplayskip \abovedisplayskip
```

102 \let\@listi\@listI}

Make \Onormalsize a synonymn for \normalsize.

103 \let\@normalsize\normalsize

```
\small This is similar to \normalsize.
              105 \newcommand*\small{%
              106 (*10pt)
                     \@setfontsize\small\@ixpt{11}%
              107
                     \abovedisplayskip 8.5\p@ \@plus3\p@ \@minus4\p@
              108
                     \abovedisplayshortskip \z@ \@plus2\p@
              109
                     \belowdisplayshortskip 4\p@ \@plus2\p@ \@minus2\p@
              110
              111 (/10pt)
              112 (*11pt)
              113
                     \@setfontsize\small\@xpt\@xiipt
                     \abovedisplayskip 10\p@ \@plus2\p@ \@minus5\p@
                     \abovedisplayshortskip \z@ \@plus3\p@
                     \belowdisplayshortskip 6\p@ \@plus3\p@ \@minus3\p@
              116
              117 (/11pt)
              118 (*12pt)
                     \ensuremath{\texttt{@setfontsize}}\
              119
                     \abovedisplayskip 11\p@ \@plus3\p@ \@minus6\p@
              120
                     \abovedisplayshortskip \z@ \@plus3\p@
              121
                     \belowdisplayshortskip 6.5\p@ \@plus3.5\p@ \@minus3\p@
              122
              123 (/12pt)
                    \belowdisplayskip \abovedisplayskip
              125 }
\footnotesize This is similar to \normalsize.
              126 \newcommand*\footnotesize{%
              127 (*10pt)
                     \@setfontsize\footnotesize\@viiipt{9.5}%
              128
                     \abovedisplayskip 6\p@ \@plus2\p@ \@minus4\p@
              129
                     \abovedisplayshortskip \z@ \@plus\p@
              130
              131
                     \belowdisplayshortskip 3\p@ \@plus\p@ \@minus2\p@
              132 (/10pt)
              133 (*11pt)
              134
                     \@setfontsize\footnotesize\@ixpt{11}%
                     \abovedisplayskip 8\p@ \@plus2\p@ \@minus4\p@
              135
                     \abovedisplayshortskip \z@ \@plus\p@
              136
                     \belowdisplayshortskip 4\p@ \@plus2\p@ \@minus2\p@
              137
              138 (/11pt)
              139 (*12pt)
                     \@setfontsize\footnotesize\@xpt\@xiipt
              140
                     \abovedisplayskip 10\p@ \@plus2\p@ \@minus5\p@
              141
              142
                     \abovedisplayshortskip \z@ \@plus3\p@
                     143
              144 (/12pt)
                    \belowdisplayskip \abovedisplayskip
              145
              146 }
  \scriptsize These are all much simpler than the previous macros, they just select a new
        \tiny fontsize, but leave the parameters for displays and lists alone.
       \large _{147} \langle*10pt\rangle
       \Large 148 \newcommand*\scriptsize{\@setfontsize\scriptsize\@viipt\@viiipt}
       \LARGE
        \huge
        \Huge
                                                     9
```

We initially choose the normalsize font.

104 \normalsize

```
149 \newcommand*\tiny{\@setfontsize\tiny\@vpt\@vipt}
150 \newcommand*\large{\@setfontsize\large\@xiipt{14}}
151 \newcommand*\Large{\@setfontsize\Large\@xivpt{18}}
152 \newcommand*\LARGE{\@setfontsize\LARGE\@xviipt{22}}
153 \newcommand*\huge{\@setfontsize\huge\@xxpt{25}}
154 \newcommand*\Huge{\@setfontsize\Huge\@xxvpt{30}}
_{155}~\langle/10pt\rangle
156 (*11pt)
157 \newcommand*\scriptsize{\@setfontsize\scriptsize\@viiipt{9.5}}
158 \newcommand*\tiny{\@setfontsize\tiny\@vipt\@viipt}
159 \newcommand*\large{\@setfontsize\large\@xiipt{14}}
160 \newcommand*\Large{\@setfontsize\Large\@xivpt{18}}
161 \newcommand*\LARGE{\@setfontsize\LARGE\@xviipt{22}}
162 \newcommand*\huge{\@setfontsize\huge\@xxpt{25}}
163 \newcommand*\Huge{\@setfontsize\Huge\@xxvpt{30}}
164 (/11pt)
165 (*12pt)
166 \newcommand*\scriptsize{\@setfontsize\scriptsize\@viiipt{9.5}}
167 \newcommand*\tiny{\@setfontsize\tiny\@vipt\@viipt}
168 \newcommand*\large{\@setfontsize\large\@xivpt{18}}
169 \newcommand*\Large{\@setfontsize\Large\@xviipt{22}}
170 \end{*} LARGE{\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\end{*}\en
171 \newcommand*\huge{\@setfontsize\huge\@xxvpt{30}}
172 \left| \text{Huge=} \right|
173 (/12pt)
174 (/10pt | 11pt | 12pt)
```

#### **Paragraphing** 7.2

\normallineskip together.

\lineskip These parameters control TeX's behaviour when two lines tend to come too close

```
175 (*artikel | rapport | boek)
176 \setlength\lineskip{1\p0}
177 \setlength\normallineskip{1\p0}
```

\baselinestretch This is used as a multiplier for \baselineskip. The default is to not stretch the baselines. Note that if this command doesn't resolve to "empty" any plus or minus part in the specification of \baselineskip is ignored.

178 \renewcommand\baselinestretch{}

\unitindent

These document classes all use a single dimension for a number of layout parameters:

- the label width in section heading,
- the \parindent
- the footnote label indent (= half \unitindent)
- listindent on the first level

179 \newdimen\unitindent

The default setting accommodates three levels of single digit section numbering.

```
180 (*type1 | type3)
181 {\setbox0\hbox{\normalsize\rmfamily 2.2.2\hskip.5em}
182 \global\unitindent=\wd0}
183 (/type1 | type3)
```

\othermargin Other indentations are maximal label width plus white space.

```
184 \newdimen\othermargin
185 {\setbox0\hbox{\normalsize (m)\hskip.6em}\global\othermargin=\wd0}
```

if@needwriteindent

If this is not enough, a new width is calculated, set, and the file.aux file contains an instruction that will set \unitindent on the next run.

For this we need a switch

```
186 \ \langle *type1 \ | \ type3 \rangle 187 \ \newif \ if @needwriteindent
```

\@indentset

And a command that sets the various parameters.

```
188 \newcommand*\@indentset{%
189 \langle!type3\rangle \global\parindent=\unitindent
190 \global\leftmargini=\unitindent
191 \global\@needwriteindenttrue}
```

\@writeindent

The \end{document} command will call \@writeindent to write the final width of \unitindent on the .aux file. Also a command is written to set \unitindent. To be compatible with other document classes a check is written to the .aux file for the existence of \unitindent. This prevents nasty errors when another document class is used.

We need to use the hook into \end{document} to write the final value of \unitindent om the file.aux file for the next run.

```
197 \AtEndDocument{%
198 \if@filesw
199 \if@needwriteindent
200 \@writeindent{\the\unitindent}
201 \fi
202 \fi}
203 \(/type1 | type3 \)
```

In the document class artikel2 the width of \unitindent is fixed and related to \othermargin.

```
204 (type2)\unitindent=2\othermargin
```

\parskip \parindent \parskip gives extra vertical space between paragraphs and \parindent is the width of the paragraph indentation. The value of \parindent depends on whether we are in two column mode.

```
205 \langle *type1 \rangle
206 \langle *type1 \rangle
```

```
207 \setlength\parindent{\unitindent}
208 (/type1)
209 (*type3)
210 \setlength\parskip{.5\baselineskip \@plus .1\baselineskip
                                         \@minus .1\baselineskip}
212 \setlength\parindent{\z0}
213 (/type3)
```

\@lowpenalty \@medpenalty \@highpenalty The commands \nopagebreak and \nolinebreak put in penalties to discourage these breaks at the point they are put in. They use \@lowpenalty, \@medpenalty or \@highpenalty, dependent on their argument.

```
214 \@lowpenalty
                  51
215 \@medpenalty 151
216 \@highpenalty 301
```

\clubpenalty \widowpenalty

These penalties are use to discourrage club and widow lines. Because we use their default values we only show them here, commented out.

```
217 % \clubpenalty 150
218 % \widowpenalty 150
```

\predisplaypenalty \postdisplaypenalty

\displaywidowpenalty Discourrage (but not so much) widows in front of a math display and forbid breaking directly in front of a display. Allow break after a display without a penalty. Again the default values are used, therefore we only show them here.

```
219 % \displaywidowpenalty 50
220 % \predisplaypenalty
221 % \postdisplaypenalty 0
```

\interlinepenalty

Allow the breaking of a page in the middle of a paragraph.

```
222 % \interlinepenalty 0
```

\brokenpenalty

We allow the breaking of a page after a hyphenated line.

```
223 % \brokenpenalty 0
224 (/artikel | rapport | boek)
```

#### Page Layout 7.3

All margin dimensions are measured from a point one inch from the top and lefthand side of the page.

#### 7.3.1Vertical spacing

\headheight \headsep \topskip The \headheight is the height of the box that will contain the running head. The \headsep is the distance between the bottom of the running head and the top of the text. \topskip is the \baselineskip for the first line on a page.

```
225 (*10pt | 11pt | 12pt)
226 \setlength\headheight{12\p@}
227 \setlength\headsep
                                   {25\p@}
228 \langle 10pt \rangle \setlength\topskip
                                             {10\p@}
229 \langle 11pt \rangle \setminus setlength \setminus topskip
                                             {11\p@}
230 \langle 12pt \rangle \setminus setlength \setminus topskip
                                             \{12\p0\}
```

\footskip The distance from the baseline of the box which contains the running footer to the baseline of last line of text is controlled by the \footskip. Bottom of page:

231 \setlength\footskip{30\p@} %

\maxdepth The TeX primitive register \maxdepth has a function that is similar to that of \topskip. The register \@maxdepth should always contain a copy of \maxdepth. In both plain TeX and LaTeX 2.09 \maxdepth had a fixed value of 4pt; in native LaTeX2e mode we let the value depend on the typesize. We set it so that \maxdepth + \topskip = typesize ×1.5. As it happens, in these classes \topskip is equal to the typesize, therefor we set \maxdepth to half the value of \topskip.

```
232 \if@compatibility
233 \setlength\maxdepth{4\p@}
234 \else
235 \setlength\maxdepth{.5\topskip}
236 \fi
```

#### 7.3.2 The dimension of text

\textwidth When we are in compatibility mode we have to make sure that the dimensions of the printed area are not different from what the user was used to see.

```
237 \if@compatibility 238 \if@twocolumn 239 \setlength\textwidth\{410\p0\} 240 \else 241 \langle 10pt \rangle \setlength\textwidth\{345\p0\} 242 \langle 11pt \rangle \setlength\textwidth\{360\p0\} 243 \langle 12pt \rangle \setlength\textwidth\{390\p0\} 244 \fi
```

When we are not in compatibility mode we can set some of the dimensions differently, taking into account the paper size for instance.

```
245 \else
```

First, we calculate the maximum textwidth, which will we will allow on the selected paper and store it in \Otempdima. Then we store the length of a line with approximately 60 – 70 characters in \Otempdimb. The values given are taken from the file a4.sty by Johannes Braams and Nico Poppelier and are more or less suitable when Computer Modern fonts are used.

```
246 \setlength\@tempdima{\paperwidth} 247 \addtolength\@tempdima{-2in} 248 \langle 10pt \rangle \setlength\@tempdimb{361\p@} 249 \langle 11pt \rangle \setlength\@tempdimb{376\p@} 250 \langle 12pt \rangle \setlength\@tempdimb{412\p@}
```

Now we can set the **\textwidth**, depending on whether we will be setting one or two columns.

In two column mode each *column* shouldn't be wider than **\@tempdimb** (which could happen on A3 paper for instance).

```
251 \if@twocolumn
252 \ifdim\@tempdima>2\@tempdimb\relax
253 \setlength\textwidth{2\@tempdimb}
254 \else
255 \setlength\textwidth{\@tempdima}
256 \fi
```

In one column mode the text should not be wider than the minimum of the paperwidth (minus 2 inches for the margins) and the maximum length of a line as defined by the number of characters.

```
257 \else
258 \ifdim\@tempdima>\@tempdimb\relax
259 \setlength\textwidth{\@tempdimb}
260 \else
261 \setlength\textwidth{\@tempdima}
262 \fi
263 \fi
264 \fi
```

Here we modify the width of the text a little to be a whole number of points.

```
265 \if@compatibility
266 \else
267 \@settopoint\textwidth
268 \fi
```

\textheight

Now that we have computed the width of the text, we have to take care of the height. The \textheight is the height of text (including footnotes and figures, excluding running head and foot).

First make sure that the compatibility mode gets the same dimensions as we had with LATEX2.09. The number of lines was calculated as the floor of the old \textheight minus \topskip, divided by \baselineskip for \normalsize. The old value of \textheight was 528pt.

```
269 \if@compatibility

270 (10pt) \setlength\textheight{43\baselineskip}

271 (11pt) \setlength\textheight{38\baselineskip}

272 (12pt) \setlength\textheight{36\baselineskip}
```

Again we compute this, depending on the papersize and depending on the baselineskip that is used, in order to have a whole number of lines on the page.

```
273 \else
```

274 \setlength\@tempdima{\paperheight}

We leave at least a 1 inch margin on the top and the bottom of the page.

275 \addtolength\@tempdima{-2in}

We also have to leave room for the running headers and footers.

```
276 \addtolength\@tempdima{-1.5in}
```

Then we divide the result by the current \baselineskip and store this in the count register \@tempcnta, which then contains the number of lines that fit on this page.

```
277 \divide\@tempdima\baselineskip
278 \@tempcnta=\@tempdima
From this we can calculate the height of the text.
279 \setlength\textheight{\@tempcnta\baselineskip}
280 \fi
The first line on the page has a height of \topskip.
281 \advance\textheight by \topskip
```

# 7.3.3 Margins

Most of the values of these parameters are now calculated, based on the papersize in use. In the calculations the \marginparsep needs to be taken into account so we give it its value first.

# \marginparsep \marginparpush

The horizontal space between the main text and marginal notes is determined by \marginparsep, the minimum vertical separation between two marginal notes is controlled by \marginparpush.

```
282 \if@twocolumn
283 \setlength\marginparsep {10\p@}
284 \else
285 \langle 10\pt \setlength\marginparsep{11\p@}
286 \langle 11\pt \setlength\marginparsep{10\p@}
287 \langle 12\pt \setlength\marginparsep{10\p@}
288 \fi
289 \langle 10\pt \langle 11\pt \setlength\marginparpush{5\p@}
290 \langle 12\pt \setlength\marginparpush{7\p@}
```

Now we can give the values for the other margin parameters. For native LATEX  $2\varepsilon$ , these are calculated.

\oddsidemargin \evensidemargin \marginparwidth First we give the values for the compatibility mode.

Values for two-sided printing:

```
\marginparwidth _{291} \if@compatibility
```

```
292
     \if@twoside
293 (10pt)
              \setlength\oddsidemargin
                                           \{44\p0\}
294 (11pt)
              \setlength\oddsidemargin
                                           {36\p@}
295 (12pt)
              \setlength\oddsidemargin
                                           \{21\p0\}
296 (10pt)
              \setlength\evensidemargin {82\p0}
297 \langle 11pt \rangle
              \setlength\evensidemargin {74\p0}
              \setlength\evensidemargin {59\p0}
298 (12pt)
299 (10pt)
              \setlength\marginparwidth {107\p0}
300 (11pt)
              \setlength\marginparwidth {100\p@}
301 \langle 12pt \rangle
```

Values for one-sided printing:

```
302
     \else
303 (10pt)
               \setlength\oddsidemargin
                                            {63\p@}
304 (11pt)
               \setlength\oddsidemargin
                                            {54\p@}
               \setlength\oddsidemargin
                                            {39.5\p@}
305 (12pt)
306 (10pt)
               \setlength\evensidemargin
                                            {63\p@}
307 (11pt)
               \setlength\evensidemargin
                                            \{54\p0\}
308 (12pt)
               \setlength\evensidemargin
                                            {39.5\p@}
309 (10pt)
               \setlength\marginparwidth
                                            {90\p@}
310 (11pt)
               \setlength\marginparwidth
                                            {83\p@}
               \setlength\marginparwidth
311 (12pt)
                                            {68\p@}
     \fi
312
```

And values for two column mode:

```
313 \if@twocolumn
314 \setlength\oddsidemargin {30\p@}
315 \setlength\evensidemargin {30\p@}
316 \setlength\marginparwidth {48\p@}
317 \fi
```

When we are not in compatibility mode we can take the dimensions of the selected paper into account.

The values for \oddsidemargin and \marginparwidth will be set depending on the status of the \if@twoside.

If **@twoside** is true (which is always the case for book) we make the inner margin smaller than the outer one.

```
318 \else
319 \if@twoside
320 \setlength\@tempdima {\paperwidth}
321 \addtolength\@tempdima {-\textwidth}
322 \setlength\oddsidemargin {.4\@tempdima}
323 \addtolength\oddsidemargin {-1in}
```

The width of the margin for text is set to the remainder of the width except for a 'real margin' of white space of width 0.4in. A check should perhaps be built in to ensure that the (text) margin width does not get too small!

```
324 \setlength\marginparwidth {.6\@tempdima}
325 \addtolength\marginparwidth {-\marginparsep}
326 \addtolength\marginparwidth {-0.4in}
```

For one-sided printing we center the text on the page, by calculating the difference between textwidth and \paperwidth. Half of that difference is than used for the margin (thus \oddsidemargin is 1in less).

```
327
328
       \setlength\@tempdima
                                     {\paperwidth}
329
       \addtolength\@tempdima
                                     {-\textwidth}
330
       \setlength\oddsidemargin
                                     {.5\@tempdima}
331
       \addtolength\oddsidemargin
                                     {-1in}
       \setlength\marginparwidth
                                     {.5\@tempdima}
332
       \addtolength\marginparwidth {-\marginparsep}
333
       \addtolength\marginparwidth {-.4in}
334
335
```

With the above algorithm the \marginparwidth can come out quite large which we may not want.

```
336 \ifdim \marginparwidth >2in
337 \setlength\marginparwidth{2in}
338 \fi
```

Having done these calculations we make them pt values.

```
339 \@settopoint\oddsidemargin
340 \@settopoint\marginparwidth
```

The \evensidemargin can now be computed from the values set above.

```
341 \setlength\evensidemargin {\paperwidth}
342 \addtolength\evensidemargin{-2in}
343 \addtolength\evensidemargin{-\textwidth}
344 \addtolength\evensidemargin{-\oddsidemargin}
```

Setting \evensidemargin to a full point value may produce a small error. However it will lie within the error range a doublesided printer of todays technology can accuratly print.

```
345 \Qsettopoint\evensidemargin 346 \fi
```

\topmargin The \topmargin is the distance between the top of 'the printable area' —which is 1 inch below the top of the paper— and the top of the box which contains the running head.

It can now be computed from the values set above.

```
347 \if@compatibility
348 \setlength\topmargin{27pt}
349 \ensuremath{\setminus} else
    \setlength\topmargin{\paperheight}
    \addtolength\topmargin{-2in}
351
    \addtolength\topmargin{-\headheight}
352
     \addtolength\topmargin{-\headsep}
353
     \addtolength\topmargin{-\textheight}
354
     \addtolength\topmargin{-\footskip}
                                                % this might be wrong!
355
 By changing the factor in the next line the complete page can be shifted vertically.
     \addtolength\topmargin{-.5\topmargin}
357
     \@settopoint\topmargin
358 \fi
```

#### 7.3.4 Footnotes

#### \footnotesep

\footnotesep is the height of the strut placed at the beginning of every footnote. It equals the height of a normal \footnotesize strut in this class, thus no extra space occurs between footnotes.

```
359 \langle 10pt \rangle \setlength \footnotesep{6.65p@} 360 \langle 11pt \rangle \setlength \footnotesep{7.7p@} 361 \langle 12pt \rangle \setlength \footnotesep{8.4p@}
```

\footins \skip\footins is the space between the last line of the main text and the top of the first footnote.

# 7.3.5 Float placement parameters

All float parameters are given default values in the  $\LaTeX$   $2_{\varepsilon}$  kernel. For this reason parameters that are not counters need to be set with  $\mbox{\tt renewcommand}$ .

## Limits for the placement of floating objects

\c@topnumber

The topnumber counter holds the maximum number of floats that can appear on the top of a text page.

```
366 \langle *artikel \mid rapport \mid boek \rangle
367 \langle *artikel \mid rapport \mid boek \rangle
```

\topfraction

This indicates the maximum part of a text page that can be occupied by floats at the top.

368 \renewcommand\topfraction{.7}

\colored \co on the bottom of a text page.

369 \setcounter{bottomnumber}{1}

\bottomfraction

This indicates the maximum part of a text page that can be occupied by floats at the bottom.

370 \renewcommand\bottomfraction{.3}

This indicates the maximum number of floats that can appear on any text page. \c@totalnumber

371 \setcounter{totalnumber}{3}

\textfraction This indicates the minimum part of a text page that has to be occupied by text.

372 \renewcommand\textfraction{.2}

\floatpagefraction This indicates the minimum part of a page that has to be occupied by floating objects before a 'float page' is produced.

373 \renewcommand\floatpagefraction{.5}

\c@dbltopnumber The dbltopnumber counter holds the maximum number of two column floats that can appear on the top of a two column text page.

374 \setcounter{dbltopnumber}{2}

\dbltopfraction This indicates the maximum part of a two column text page that can be occupied by two column floats at the top.

375 \renewcommand\dbltopfraction{.7}

\dblfloatpagefraction This indicates the minimum part of a page that has to be occupied by two column wide floating objects before a 'float page' is produced.

```
376 \renewcommand\dblfloatpagefraction{.5}
377 (/artikel | rapport | boek)
```

# Floats on a text page

\floatsep \textfloatsep \intextsep When a floating object is placed on a page with text, these parameters control the seperation between the float and the other objects on the page. These parameters are used for both one-column mode and single-column floats in two-column mode.

\floatsep is the space between adjacent floats that are moved to the top or bottom of the text page.

\textfloatsep is the space between the main text and floats at the top or bottom of the page.

\intextsep is the space between in-text floats and the text.

```
378 (*10pt)
379 \setlength\floatsep
                           {12\p@ \@plus 2\p@ \@minus 2\p@}
380 \setlength\textfloatsep{20\p0 \0plus 2\p0 \0minus 4\p0}
381 \setlength\intextsep
                          {12\p@ \@plus 2\p@ \@minus 2\p@}
382 (/10pt)
383 (*11pt)
384 \setlength\floatsep
                           {12\p0 \0plus 2\p0 \0minus 2\p0}
385 \setlength\textfloatsep{20\p0 \@plus 2\p0 \@minus 4\p0}
386 \setlength\intextsep \{12\p0\q \Qplus 2\p0\q \Qminus 2\p0\q
387 (/11pt)
```

```
388 \ensuremath{\$} \ensuremath{\$}
```

\dblfloatsep \dbltextfloatsep

When floating objects that span the whole \textwidth are placed on a text page when we are in twocolumn mode the separation between the float and the text is controlled by \dblfloatsep and \dbltextfloatsep.

\dblfloatsep is the space between adjacent floats that are moved to the top or bottom of the text page.

\dbltextfloatsep is the space between the main text and floats at the top or bottom of the page.

## Floats on their own page or column

\@fptop
\@fpsep
\@fpbot

When floating objects are placed on seperate pages the layout of such pages is controlled by these parameters. At the top of the page \@fptop amount of stretchable whitespace is inserted, at the bottom of the page we get an \@fpbot amount of stretchable whitespace. Between adjacent floats the \@fpsep is inserted.

These parameters are used for the placement of floating objects in one column mode, or in single column floats in two column mode.

Note that at least one of the two parameters \@fptop and \@fpbot should contain a plus ...fil to allow filling the remaining empty space.

```
405 (*10pt)
406 \setlength\@fptop{0\p@ \@plus 1fil}
407 \setlength\@fpsep{8\p@ \@plus 2fil}
408 \setlength\@fpbot{0\p@ \@plus 1fil}
409 (/10pt)
410 (*11pt)
411 \setlength\@fptop{0\p@ \@plus 1fil}
412 \setlength\@fpsep{8\p@ \@plus 2fil}
413 \setlength\@fpbot{0\p@ \@plus 1fil}
414 (/11pt)
415 (*12pt)
416 \setlength\@fptop{0\p@ \@plus 1fil}
417 \setlength\@fpsep{10\p@ \@plus 2fil}
418 \setlength\@fpbot{0\p@ \@plus 2fil}
419 (/12pt)
```

```
\@dblfptop Double column floats in two column mode are handled with similar parameters.
\@dblfpsep _{420} (*10pt)
\@dblfpbot 421 \setlength\@dblfptop{0\p@ \@plus 1fil}
                                                    422 \setlength\@dblfpsep{8\p@ \@plus 2fil}
                                                     423 \setlength\@dblfpbot{0\p@ \@plus 1fil}
                                                     424 \langle /10pt \rangle
                                                     425 \langle *11pt \rangle
                                                     426 \setlength\@dblfptop{0\p@ \@plus 1fil}
                                                     427 \setlength\@dblfpsep{8\p@ \@plus 2fil}
                                                     428 \setlength\@dblfpbot{0\p@ \@plus 1fil}
                                                     429 (/11pt)
                                                    430 \langle *12pt \rangle
                                                    431 \setlength\@dblfptop{0\p@ \@plus 1fil}
                                                     432 \setlength\@dblfpsep{10\p@ \@plus 2fil}
                                                     433 \ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{
                                                     434 (/12pt)
                                                     435 (*artikel | rapport | boek)
```

# 7.4 Page Styles

The page style foo is defined by defining the command \ps@foo. This command should make only local definitions. There should be no stray spaces in the definition, since they could lead to mysterious extra spaces in the output (well, that's something that should be always avoided).

\@evenhead \@oddhead \@evenfoot \@oddfoot The \ps@... command defines the macros \@oddhead, \@oddfoot, \@evenhead, and \@evenfoot to define the running heads and feet—e.g., \@oddhead is the macro to produce the contents of the heading box for odd-numbered pages. It is called inside an \hbox of width \textwidth.

\thispagestyle

Several commands (\index, \maketitle) give a \thispagestyle{plain} command, which will overrule a \pagestyle{empty} command. This situation is almost always unwanted. Therefore we provide a more careful definition.

First save the original definition.

```
436 \let\Thispagestyle\thispagestyle
```

Then we provide the new definition, for which we must also adapt \pagestyle a little

```
437 \newcommand*\@emptypagestyle{empty}
438 \renewcommand*\pagestyle[1]{\@nameuse{ps@#1}\def\@currentpagestyle{#1}}
439 \renewcommand*\thispagestyle[1]{%
440 \ifx\@currentpagestyle\@emptypagestyle
441 \else
442 \global\@specialpagetrue
443 \gdef\@specialstyle{#1}%
444 \fi}
```

## 7.4.1 Marking conventions

To make headings determined by the sectioning commands, the page style defines the commands  $\chaptermark$ ,  $\scaled$  by  $\chapter$  to set a mark, and so on.

The \...mark commands and the \...head macros are defined with the help of the following macros. (All the \...mark commands should be initialized to no-ops.)

LATEX extends TEX's \mark facility by producing two kinds of marks, a 'left' and a 'right' mark, using the following commands:

\leftmark: Used in the \@oddhead, \@oddfoot, \@evenhead or \@evenfoot macros, it gets the current 'left' mark. \leftmark works like TEX's \botmark command.

\rightmark: Used in the \@oddhead, \@oddfoot, \@evenhead or \@evenfoot macros, it gets the current 'right' mark. \rightmark works like TEX's \firstmark command.

The marking commands work reasonably well for right marks 'numbered within' left marks—e.g., the left mark is changed by a \chapter command and the right mark is changed by a \section command. However, it does produce somewhat anomalous results if two \markboth's occur on the same page.

Commands like \tableofcontents that should set the marks in some page styles use a \@mkboth command, which is \let by the pagestyle command (\ps@...) to \markboth for setting the heading or to \@gobbletwo to do nothing.

## 7.4.2 Defining the page styles

The pagestyle *empty* is defined in latex.dtx, but the pagestyle *plain* is slightly altered here. The difference is that the page numbers are set flush right in onesided and flush left and right in the twosided style.

# \ps@plain

```
445 \renewcommand*\ps@plain{%
```

The running head are empty in this pagestyle, the page number appears in the running foot.

```
446 \let\@oddhead\@empty\let\@evenhead\@empty
447 \def\@oddfoot{\hfil\PageFont\thepage}%
448 \if@twoside
449 \def\@evenfoot{\PageFont\thepage\hfil}%
450 \else
451 \let\@evenfoot\@oddfoot
452 \fi
```

Because the running heads should be empty we let  $\mbox{\tt Qmkboth}$  to  $\mbox{\tt Qgobbletwo}$ , thus disabling the mark commands.

```
453 \let\@mkboth\@gobbletwo}
```

\ps@headings The definition of the page style headings has to be different for two sided printing than it is for one sided printing.

```
454 \if@twoside
455 \def\ps@headings{%
```

The running feet are empty in this page style, the running head contains the page number and one of the marks.

When using this page style, the contents of the running head is determined by the chapter and section titles. So we \let \@mkboth to \markboth.

```
459 \let\@mkboth\markboth
```

For the artikel document classes we define \sectionmark to clear the right mark and put the number of the section (when it is numbered) and its title in the left mark. The rightmark is set by \subsectionmark to contain the subsection titles.

Note the use of ##1 for the parameter of the \sectionmark command, which will be defined when \ps@headings is executed.

```
\def\sectionmark##1{%
461
           \markboth {\MakeUppercase{%
462
463
               464
                 \thesection\quad
               \fi
465
               ##1}}{}}%
466
         \def\subsectionmark##1{%
467
           \markright {%
468
             \ifnum \c@secnumdepth >\@ne
469
470
               \thesubsection\quad
             \fi
471
             ##1}}}
472
473 (/artikel)
```

In the rapport and book document classes we use the \chaptermark and \sectionmark macros to fill the running heads.

Note the use of ##1 for the parameter of the \chaptermark command, which will be defined when \ps@headings is executed.

```
474 (*rapport | boek)
475
          \def\chaptermark##1{%
476
            \markboth {\MakeUppercase{\ifnum \c@secnumdepth >\m@ne
477 (boek)
                    \if@mainmatter
478
                   \@chapapp\ \thechapter. \ %
479 (boek)
                \fi
480
                ##1}}{}}%
481
482
          \def\sectionmark##1{%
483
            \markright {\MakeUppercase{\ifnum \c@secnumdepth >\z@
                \thesection. \ \fi
484
485
                ##1}}}
486 (/rapport | boek)
```

The definition of \ps@headings for one sided printing can be much simpler, because we treat even and odd pages the same. Therefore we don't need to define \@even....

```
487 \else
488 \def\ps@headings{%
```

```
\let\@oddfoot\@empty
489
        \def\@oddhead{{\MarkFont\rightmark}\hfil\PageFont\thepage}%
490
        \let\@mkboth\markboth
491
 We use \markright now instead of \markboth as we did for two sided printing.
492 (*artikel)
        \def\sectionmark##1{%
493
494
          \markright {\MakeUppercase{%
495
              \ifnum \c@secnumdepth >\m@ne
496
                 \thesection\quad
497
              ##1}}}
498
499 (/artikel)
500 (*rapport | boek)
501
        \def\chaptermark##1{%
          \markright {\MakeUppercase{%
502
              \ifnum \c@secnumdepth >\m@ne
503
504 (boek)
                      \if@mainmatter
                   \@chapapp\ \thechapter. \ %
505
506 (boek)
507
              \fi
508
              ##1}}}
509 (/rapport | boek)
510 \fi
```

\ps@myheadings

The definition of the page style *myheadings* is fairly simple because the user determines the contents of the running head himself by using the \markboth and \markright commands.

```
511 \def\ps@myheadings{%
512 \let\@oddfoot\@empty\let\@evenfoot\@empty
513 \def\@evenhead{{\PageFont\thepage}\hfil\MarkFont\leftmark}%
514 \def\@oddhead{{\MarkFont\rightmark}\hfil\PageFont\thepage}%
```

We have to make sure that the marking commands that are used by the chapter and section headings are disabled. We do this \letting them to a macro that gobbles its argument(s).

```
515 \let\@mkboth\@gobbletwo
516 \let\chaptermark\@gobble
517 \let\sectionmark\@gobble
518 \artikel\ \let\subsectionmark\@gobble
519 \}
```

\PageFont These macros are use to store the fonts that are used to typeset the pagenumber \MarkFont (\PageFont) and the marks (\MarkFont) in the running head and feet.

```
520 \newcommand*\PageFont{\rmfamily} 521 \newcommand*\MarkFont{\slshape}
```

\RunningFonts Use this macro to change the fonts that are used in the running heads.

```
522 \newcommand*\RunningFonts[2]{%
523 \renewcommand*\PageFont{#1}\renewcommand*\MarkFont{#2}}
```

# 8 Document Markup

#### 8.1 The title

\title \author \date These three macros are provided by latex.dtx to provide information about the title, author(s) and date of the document. The information is stored away in internal control sequences. It is the task of the \maketitle command to use the information provided. The definitions of these macros are shown here for information.

```
524 % \newcommand*\title[1]{\gdef\@title{#1}}
525 % \newcommand*\author[1]{\gdef\@author{#1}}
526 % \newcommand*\date[1]{\gdef\@date{#1}}
The \date macro gets today's date by default.
527 % \gdef\@date{\today}
```

\TitleFont This selects the font to use in the title of the document.

528 \newcommand\*\TitleFont{\bfseries}

\maketitle The definition of \maketitle depends on whether a seperate title page is made. This is the default for the rapport and book document classes, but for the artikel classes it is optional. Note that the title, author and date information is printed in capital letters by default. This can be changed by the option mctitle.

When we are making a title page, we locally redefine \footnotesize and \footnoterule to change the appearance of the footnotes that are produced by the \thanks command.

```
529 (!boek)\if@titlepage
530 \renewcommand*\TitleFont{\rmfamily}
531 \newcommand*\maketitle{%
532 \begin{titlepage}%
533 \let\footnotesize\small
534 \let\footnoterule\relax
535 \let\footnote \thanks
```

Footnotes on the title page, generated by the use of  $\$  use symbols in these document classes.

We center the entire title vertically; the centering is set off a little by adding a \vskip. In compatibility mode the pagenumber is set to 0 to keep the behaviour of LATEX 2.09 style files

```
540 \if@compatibility\setcounter{page}{0}\fi
541 \null\vfil
542 \vskip 60\p@
```

Then we set the title, in a \LARGE font; leave a little space and set the author(s) in a \large font. We do this inside a tabular environment to get them in a single column. Before the date we leave a little whitespace again.

```
543 \begin{center}%
544 \TitleFont
545 {\LARGE \def\\{\penalty -\QM}
```

```
\if@allcaps
546
              \expandafter\uc@nothanks\@title\thanks\relax
547
            \else
548
              \@title
549
            \fi\par}%
550
          \vskip 3em%
551
552
          {\large
            \lineskip .75em \parindent\z@
553
            \begin{tabular}[t]{c}%
554
              \if@allcaps
555
                 \expandafter\uc@authornothanks\@author\and\relax
556
              \else
557
                 \@author
558
              \fi
559
            \end{tabular}\par}%
560
          \vskip 1.5em%
561
562
          {\large
563
            \if@allcaps
564
              \uppercase\expandafter{\@date}%
565
            \else
              \@date
566
            \fi\par}%
567
          \end{center}\par
568
```

Then we call \@thanks to print the information that goes into the footnote and finish the page.

```
569 \Othanks
570 \vfil\null
571 \end{titlepage}%
```

We reset the footnote counter, disable \thanks and \maketitle and save some storage space by emptying the internal information macros.

```
572 \setcounter{footnote}{0}%
573 \global\let\thanks\relax
574 \global\let\@thanks\@empty
576 \global\let\@author\@empty
577 \global\let\@title\@empty
578 \global\let\@date\@empty
```

After the title is set the declaration commands \title, etc. can vanish. The definition of \and makes only sense within the argument of \author so this can go as well.

```
579 \global\let\title\relax

580 \global\let\author\relax

581 \global\let\date\relax

582 \global\let\and\relax

583 }
```

We want to have the title, author and date information in uppercase, but we have to be very carefull not to put too much text in uppercase. The macros that perform the filtering of texts that shouldn't be in uppercase were developed with th help of Howard Trickey.

\uc@nothanks This macro takes all the text up to the first use of \thanks and passes it to

\uppercase. The use of \futurelet will store the token after the \thanks in \Ctempa. The macro \uQtx uses that information to determine what to do next.

 $584 \end{area} $1 \rightarrow \end{are$ 

\uc@authornothanks

A document can have more than one author. Usually they are seperated with \and. For each author a footnote —using \thanks can be present. Therefore this macro takes all the text up to the first use of \and, thus picking up all the information for one author. This is than passed to \uc@nothanks, which checks for the presence of \thanks. For this to work the argument of \uc@nothanks has to be delimited by \thanks\relax.

 $585 \ensuremath{\mbox{\mbox{\mbox{$1$}}}\$ 

Then we have to check whether the \and we ound earlier was put in by the user, in which case information for another user will follow, or by the call from another macro, in which case the \and will be followed by a \relax token. The \futurelet contstruct stores the first token after the \and in \@tempa to be inspected by \u@ax.

586 \futurelet\@tempa\uc@ax}

When \@tempa contains a \relax token nothing needs to be done, when it doesn't we put in a linebreak \\ the word 'and' (stored in \andname so that this control sequence can be redeined for other languages), another linebreak and we call \uc@authornothanks to continue processing. The \expandafter lets TeX see the \fi first.

```
587 \def\uc@ax{%
588 \ifx\@tempa\relax
589 \else
590 \\ \andname \\ \expandafter\uc@authornothanks
591 \fi}
```

\uc@tx This macro simply checks whether \@tempa contains a \relax token. When it doesn't further processing is performed by \u@ty.

```
592 \def\uc@tx{\ifx\@tempa\relax
593 \else \expandafter\uc@ty \fi}
```

The macro \uc@ty gets executed when the \thanks that delimited text earlier on in the processing had a real argument. In that case it was a \thanks put in by the user, not by these macros. Therefore the argument is now passed to \thanks and processing continues by calling \uc@nothanks.

```
594 \def\uc@ty#1{\thanks{#1}\uc@nothanks}
```

When the title is not on a page of its own, the layout of the title is a little different. We use symbols to mark the footnotes and we have to deal with two column documents.

Therefore we first start a new group to keep changes local. Then we redefine \thefootnote to use \fnsymbol; and change \@makefnmark so that footnotemarks have zero width (to make the centering of the author names look better). We also want raised footnotemarkers in the footnotes here.

```
598
     \begingroup
        \renewcommand*\thefootnote{\@fnsymbol\c@footnote}%
599
600 \langle !type2 \rangle
               \def\@makefnmark{\rlap{%
601 (!type2)
                 \@textsuperscript{\normalfont\@thefnmark}}}%
602 (!type2)
               \long\def\@makefntext{\@xmakefntext{%
603 (!type2)
                 \@textsuperscript{\normalfont\@thefnmark}}}%
604 (*type2)
        \long\def\@makefntext##1{\parindent\z@
605
          \def\labelitemi{\textendash}%
606
          \leavevmode\hb@xt@.5\unitindent{%
607
            \@textsuperscript{\normalfont\@thefnmark}\hfil}##1}
608
609 (/type2)
```

If this is a twocolumn document we start a new page in twocolumn mode, with the title set to the full width of the text. The actual printing of the title information is left to \@maketitle.

```
610 \if@twocolumn
611 \ifnum \col@number=\@ne
612 \@maketitle
613 \else
614 \twocolumn[\@maketitle]%
615 \fi
616 \else
```

When this is not a twocolumn document we just start a new page, prevent floating objects from appearing on the top of this page and print the title information.

```
617 \newpage
618 \global\@topnum\z@
619 \@maketitle
620 \fi
```

This page gets a plain layout. We call \Othanks to produce the footnotes.

```
621 \thispagestyle{plain}\@thanks
```

Now we can close the group, reset the *footnote* counter, disable **\thanks**, **\maketitle** and **\@maketitle** and save some storage space by emptying the internal information macros.

```
622
     \endgroup
     \setcounter{footnote}{0}%
623
     \global\let\thanks\relax
624
     \global\let\maketitle\relax
625
626
     \global\let\@maketitle\relax
     \global\let\@thanks\@empty
627
     \global\let\@author\@empty
628
     \global\let\@title\@empty
629
630
     \global\let\@date\@empty
631
     \global\let\title\relax
632
     \global\let\author\relax
     \global\let\date\relax
633
634
     \global\let\and\relax
635
```

\Cmaketitle This macro takes care of formatting the title information when we have no seperate title page.

We always start a new page, leave some white space and center the information. The title is set in a **\LARGE** font, the author names and the in a **\large** font.

```
636 \def\@maketitle{%
     \newpage
637
     \null
638
639
     \vskip 2em%
640 (type3) \if@titlecentered
641
     \begin{center}%
642
       \let \footnote \thanks
643
       {\LARGE \TitleFont \@title \par}%
644
       \vskip 1.5em%
       {\large \TitleFont
645
         \lineskip .5em%
646
         \begin{tabular}[t]{c}%
647
           \@author
648
         \end{tabular}\par}%
649
650
       \vskip 1em%
       {\large \TitleFont \@date}%
651
     \end{center}%
652
653 (*type3)
    \else
654
655
        {\LARGE \TitleFont \head@style \@title \par} \vskip 1.5em
        {\c TitleFont \lineskip .5em \tabcolsep\z0}
656
                657
                         \end{tabular}\hskip 1em plus .17fil
658
                         \begin{tabular}[t]{1}}% \end{tabular} will come
659
660
                \begin{tabular}[t]{1}\@author\end{tabular}\par}
        \vskip 1em {\large \TitleFont \@date}
661
662 \fi
663 (/type3)
664
     \par
665
     \vskip 1.5em}
666 \fi
667 (/!boek)
```

# 8.2 Chapters and Sections

#### 8.2.1 Building blocks

The definitions in this part of the class file make use of two macros, \@startsection and \secdef, which are defined by latex.dtx. To understand what is going on here, we describe their syntax.

The macro  $\c Cstartsection$  has 6 required arguments, optionally followed by a \*, an optional argument and a required argument:

```
\label{eq:condition} $$ \end{are} \end{are} $$ \end{are} \end{are} $$ \end{are} \end{are} $$ \end{are} \end{are} $$ \end
```

It is a generic command to start a section, the arguments have the following meaning:

 $\langle name \rangle$  The name of the user level command, e.g., 'section'.

 $\langle level \rangle$  A number, denoting the depth of the section – e.g., chapter=1, section = 2, etc. A section number will be printed if and only if  $\langle level \rangle <=$  the value of the secnumdepth counter.

(indent) The indentation of the heading from the left margin

- $\langle beforeskip \rangle$  The absolute value of this argument gives the skip to leave above the heading. If it is negative, then the paragraph indent of the text following the heading is suppressed.
- $\langle afterskip \rangle$  If positive, this gives the skip to leave below the heading, else it gives the skip to leave to the right of a run-in heading.
- ⟨style⟩ Commands to set the style of the heading. Since the June 1996 release of LATEX the last command in this argument may be a command such as \MakeUppercase or \fbox that takes an argument. The section heading will be supplied as the argument to this command. So setting #6 to, say, \bfseries\MakeUppercase would produce bold, uppercase headings.
- \* When this is missing the heading is numbered and the corresponding counter is incremented.
- $\langle altheading \rangle$  Gives an alternative heading to use in the table of contents and in the running heads. This should be not present when the \* form is used.

 $\langle heading \rangle$  The heading of the new section.

A sectioning command is normally defined to **\@startsection** and its first six arguments.

The macro \secdef can be used when a sectioning command is defined without using \@startsection. It has two arguments:

```
\scalebox{secdef}\langle unstarcmds\rangle\langle starcmds\rangle
```

(unstarcmds) Used for the normal form of the sectioning command.

 $\langle starcmds \rangle$  Used for the \*-form of the sectioning command.

You can use \secdef as follows:

\head@style In the definition of chapter and section commands a number of settings frequently occur. Therefore we store them in a control sequence.

Section headings are to be set extremely ragged right, with no hyphenations, not even at explicit hyphens.

```
668 \newcommand*\head@style{%
669 \interlinepenalty \@M
670 \hyphenpenalty=\@M \exhyphenpenalty=\@M
671 \rightskip=0cm plus .7\hsize\relax}
```

\*\*Consect The definition of this macro from latex.dtx needs to be repeated here because we want to modify its behaviour with respect to:

1. the width of the number, which is fixed;

- 2. checking the value of \unitindent;
- 3. formatting the section title ragged right;
- 4. changing the argument of \contentsline.

```
672 \def\@sect#1#2#3#4#5#6[#7]#8{%
673 \ifnum #2>\c@secnumdepth
674 \let\@svsec\@empty
675 \else
676 \refstepcounter{#1}%
```

The following code (within the group) checks the value of \unitindent. If the sectionnumber is wider than \unitindent its value is adapted and a flag is set to remember to store the new value in the .aux-file.

```
677 (*type1 | type3)
        \begingroup
678
679
           \ensuremath{\texttt{Setbox}\@dempboxa=\hbox{\#6}relax}
                                        \csname the#1\endcsname
680
681
                                        \hskip.5em}
           \ifdim\wd\@tempboxa>\unitindent
682
             \global\unitindent=\wd\@tempboxa
683
684
             \@indentset
685
           \fi
686
        \endgroup
687 (/type1 | type3)
```

Since \@seccntformat might end with an improper \hskip which is scanning forward for plus or minus we end the definition of \@svsec with \relax as a precaution.

```
688 \protected@edef\@svsec{\@seccntformat{#1}\relax}%
689 \fi
690 \@tempskipa #5\relax
691 \ifdim \@tempskipa>\z@
692 \begingroup
```

This { used to be after the argument to \@hangfrom but was moved here to allow commands such as \MakeUppercase to be used at the end of #6.

```
#6{%
693
694 \langle *type1 | type3 \rangle
         695
696 (/type1 | type3)
697 (*type2)
          \@hangfrom{\hskip #3}
698
                    \head@style\@svsec \hskip.3em\relax #8\endgraf}
699
700 (/type2)
701
702
       \csname #1mark\endcsname{#7}%
703
       \addcontentsline{toc}{#1}{%
704
         \ifnum #2>\c@secnumdepth
705
         \else
            \protect\numberline{\csname the#1\endcsname}%
706
         \fi
707
         \toc@font#2 #7}%
708
709
        \else
```

```
\def\@svsechd{#6\hskip #3\relax
710
             \@svsec #8\csname #1mark\endcsname{#7}%
711
             \addcontentsline{toc}{#1}{%
712
               \ifnum #2>\c@secnumdepth
713
714
               \else
                 \protect\numberline{\csname the#1\endcsname}%
715
               \fi
716
717
               \toc@font#2 #7}}%
718
        \fi
        \@xsect{#5}}
719
```

This macro was introduced in LATEX  $2\varepsilon$ , its definition is changed here to get the fixed with of the section number.

```
720 \def\@seccntformat#1{%
           \hb@xt@\unitindent{\csname the#1\endcsname \hfil}%
721 (!type2)
           \csname the #1\endcsname\hskip.3em\relax
722 (type2)
```

\@ssect Similar changes need to be made to the definition of \@ssect, which is used in 'starred' sections.

```
724 \def\@ssect#1#2#3#4#5{\@tempskipa #3\relax
     \ifdim \@tempskipa>\z@
725
726
       \begingroup
```

This { used to be after the argument to \@hangfrom but was moved here to allow commands such as \MakeUppercase to be used at the end of #6.

```
727
            \@hangfrom{\hskip #1}\head@style #5\endgraf}%
728
729
       \endgroup
730
     \else
       \def\@svsechd{#4\hskip #1\relax #5}%
731
     \fi
732
     \0xsect{#3}}
733
```

#### Mark commands 8.2.2

\chaptermark \sectionmark \subsectionmark

Default initializations of \...mark commands. These commands are used in the definition of the page styles (see section 7.4.2) Most of them are already defined by latex.tex, so they are only shown here.

```
\verb|\subsubsectionmark|| 734 | \langle | artikel \rangle \\ \verb|\newcommand*| \\ chaptermark[1]{} | \{ \} | \} \\
    \paragraphmark 735 % \newcommand*\sectionmark[1]{}
 \subparagraphmark _{736} % \newcommand*\subsectionmark[1]{}
                       737 % \newcommand*\subsubsectionmark[1]{}
                        738 % \newcommand*\paragraphmark[1]{}
                        739 % \newcommand*\subparagraphmark[1]{}
```

#### 8.2.3 Define Counters

\c@secnumdepth

The value of the counter secnumdepth gives the depth of the highest-level sectioning command that is to produce section numbers.

```
740 (artikel)\setcounter{secnumdepth}{3}
741 (!artikel)\setcounter{secnumdepth}{2}
```

```
These counters are used for the section numbers. The macro
                                        \c@part
                                                                                \newcounter{\langle newctr \rangle}[\langle oldctr \rangle]
                           \c@chapter
                           \c@section
                                                                               defines \langle newctr \rangle to be a counter, which is reset to zero when counter \langle oldctr \rangle is
             \c@subsection
                                                                               stepped. Counter \langle oldetr \rangle must already be defined.
\c@subsubsection _{742} \newcounter {part}
                 \verb|\c@paragraph||_{743} \ | (artikel) \ | (
    \c@subparagraph _{744} \langle *rapport \mid boek 
angle
                                                                             745 \newcounter {chapter}
                                                                            746 \newcounter {section}[chapter]
                                                                            747 (/rapport | boek)
                                                                            748 \newcounter {subsection} [section]
                                                                             749 \newcounter {subsubsection}[subsection]
                                                                             750 \newcounter {paragraph}[subsubsection]
                                                                             751 \newcounter {subparagraph}[paragraph]
```

\thepart
\thechapter
\thesection
\thesubsection
\thesubsection

For any counter CTR, \theCTR is a macro that defines the printed version of counter CTR. It is defined in terms of the following macros:

\arabic{COUNTER} prints the value of COUNTER as an arabic numeral.

 $\mbox{{\tt roman}{COUNTER}}$  prints the value of COUNTER as a lowercase roman numberal.

\thesabsabsection \theparagraph \thesabparagraph

 $\label{local_counter} $$\operatorname{COUNTER}$ prints the value of $COUNTER$ as an uppercase roman numberal.$ 

**\alph{**COUNTER**}** prints the value of COUNTER as a lowercase letter: 1 = a, 2 = b, etc.

 $\Alph\{COUNTER\}\$  prints the value of COUNTER as an uppercase letter:  $1=A,\,2=B,\,{\rm etc.}$ 

Actually to save space the internal counter repesentations and the commands operating on those are used.

```
752 \renewcommand*\thepart{\@Roman\c@part}
753 \artikel\\renewcommand\thesection{\@arabic\c@section}
754 \artikel\\renewcommand\thesection{\@arabic\c@section}
755 \renewcommand*\thechapter{\@arabic\c@chapter}
756 \renewcommand*\thesection{\thechapter.\@arabic\c@section}
757 \artikel\\renewcommand*\thesubsection{\thesection.\@arabic\c@subsection}
758 \renewcommand*\thesubsubsection{\thesubsection.\@arabic\c@subsubsection}
759 \renewcommand*\thesubsubsection{\thesubsection.\@arabic\c@subsubsection}
760 \renewcommand*\thesubsubaragraph{\thesubsubsection.\@arabic\c@subparagraph}
761 \renewcommand*\thesubparagraph{\thesubaragraph.\@arabic\c@subparagraph}
```

\@chapapp

\@chapapp is initially defined to be '\chaptername'. The \appendix command redefines it to be '\appendixname'.

762 (rapport | boek) \newcommand\*\@chapapp{\chaptername}

# 8.2.4 Front Matter, Main Matter, and Back Matter

A book contains these three sections. First, we define the switch \@mainmatter that is true iff we are processing Main Matter. When this switch is false, the \chapter command does not print chapter numbers.

Here we define the commands that start these sections.

\frontmatter This command starts Roman page numbering and turns off chapter numbering.

```
763 (*boek)
764 \newcommand*\frontmatter{%
765 \cleardoublepage
766 \@mainmatterfalse
767 \pagenumbering{roman}}
```

\mainmatter This command clears the page, starts arabic page numbering and turns on chapter numbering.

```
768 \newcommand*\mainmatter{%
769 \cleardoublepage
770 \@mainmattertrue
771 \pagenumbering{arabic}}
```

\backmatter This clears the page, turns off chapter numbering and leaves page numbering unchanged.

```
772 \newcommand*\backmatter{%
773 \if@openright\cleardoublepage\else\clearpage\fi
774 \@mainmatterfalse}
775 \/boek\
```

#### 8.2.5 Parts

\part The command to start a new part of our document.

In the artikel classes the definition of \part is rather simple; we start a new paragraph, add a little white space, suppress the indentation of the first paragraph (not for the artikel2 document class) and make use of \@secdef.

```
776 (*artikel)
777 \newcommand*\part{%
778 \if@noskipsec \leavevmode \fi
779 \par
780 \addvspace{4ex}%
781 (!type2) \@afterindentfalse
782 \type2) \@afterindenttrue
783 \secdef\@part\@spart}
784 (/artikel)
```

For the rapport and book classes we things a bit different.

We start a new (righthand) page and use the empty pagestyle.

```
785 (*rapport | boek)
786 \newcommand*\part{%
787 \cleardoublepage
788 \thispagestyle{empty}%
```

When we are making a two column document, this will be a one column page. We use @tempswa to remember to switch back to two columns.

```
789 \if@twocolumn
790 \onecolumn
791 \@tempswatrue
792 \else
793 \@tempswafalse
794 \fi
```

We need an empty box to prevent the fil glue from disappearing.

```
795 \null\vfil
```

Here we use \secdef to indicate which commands to use to make the actual heading.

```
796 \secdef\@part\@spart}
797 \langle/rapport | boek\rangle
```

This macro does the actual formatting of the title of the part. Again the macro is differently defined for the artikel document classes than for the document classes rapport and book.

\PartFont The font used to typeset the part is stored in this maro.

```
798 \newcommand*\PartFont{\bfseries}
```

When secnumdepth is larger than -1 for the artikel document classes, we have a numbered part, otherwise it is unnumbered.

```
799 (*artikel)
800 \def\@part[#1]#2{%
801 \ifnum \c@secnumdepth >\m@ne
802 \refstepcounter{part}%
803 \addcontentsline{toc}{part}{\thepart\hspace{1em}#1}%
804 \else
805 \addcontentsline{toc}{part}{#1}%
806 \fi
```

We print the title flush left in the artikel classes. Also we prevent breaking between lines and reset the font.

```
807 {\head@style
808 \parindent\unitindent
809 \normalfont
```

When this is a numbered part we have to print the number and the title. The \nobreak should prevent a page break here.

```
| Since | Sinc
```

Then we empty the mark registers, leave some white space and call \Oafterheading to takes care of suppressing the indentation.

```
817 \markboth{}{\par}%
818 \nobreak
819 \vskip 3ex
820 \@afterheading}
821 \/artikel\
```

When secnum depth is larger than -2 for the document class rapport and book, we have a numbered part, otherwise it is unnumbered.

```
822 (*rapport | boek)
823 \def\@part[#1]#2{%
824 \ifnum \c@secnumdepth >-2\relax
825 \refstepcounter{part}%
826 \addcontentsline{toc}{part}{\thepart\hspace{1em}\toc@case{#1}}%
827 \else
```

```
828 \addcontentsline{toc}{part}{\toc@case{#1}}%
829 \fi
```

We empty the mark registers and center the title on the page in the rapport and book document classes. Also we prevent breaking between lines and reset the font.

```
830 \markboth{}{}%

831 {\centering

832 \interlinepenalty \@M

833 \normalfont
```

When this is a numbered part we have to print the number. We have to expand \partname before \uppercase is called, therefore we use a temporary control sequence that, when called will execute \uppercase on the contents of \partname.

```
834 \ifnum \c@secnumdepth >-2\relax
835 \Large\PartFont
836 \edef\@tempa{\noexpand\uppercase{\partname}}\@tempa
837 \nobreakspace\thepart
838 \par
```

We leave some space before we print the title and leave the finishing up to \@endpart.

```
839 \vskip 20\p0
840 \fi
841 \Large \PartFont \uppercase{#2}\par}%
842 \Oendpart}
843 \(/rapport | boek\)
```

This macro does the actual formatting of the title of the part when the star form of the user command was used. In this case we *never* print a number. Otherwise the formatting is the same.

The differences between the definition of this macro in the artikel document classes and in the rapport and book document classes are similar as they were for \@part.

```
844 (*artikel)
845 \def\@spart#1{%
846
        {\parindent \z@
847
         \head@style
848
         \normalfont
849 \langle !type2 \rangle
                 \Large \PartFont \noindent #1\par}%
                \Large \PartFont \indent #1\par}%
850 (type2)
         \nobreak
851
         \vskip 3ex
852
         \@afterheading}
853
854 (/artikel)
855 (*rapport | boek)
856 \def\@spart#1{%
        {\centering
857
         \interlinepenalty \@M
858
859
         \normalfont
         \Large \PartFont #1\par}%
860
861
        \@endpart}
```

\Cendpart This macro finishes the part page, for both \Centure part and \Centure spart.

First we fill the current page.

## $862 \def\@endpart{\vfil\newpage}$

Then, when we are in two ided mode and chapters are supposed to be on right hand sides, we produce a completely blank page.

```
      863 (!boek)
      \if@twoside

      864
      \if@openright

      865
      \null

      866
      \thispagestyle{empty}%

      867
      \newpage

      868
      \fi

      869 (!boek)
      \fi
```

When this was a two column document we have to switch back to two column mode.

## 8.2.6 Chapters

\chapter A chapter should a

A chapter should always start on a new page therefore we start by calling \clearpage and setting the pagestyle for this page to plain.

```
874 \*rapport | boek\\
875 \newcommand*\chapter{\if@openright\cleardoublepage\else\clearpage\fi
876 \thispagestyle{plain}%
```

Then we prevent floats from appearing at the top of this page because it looks weird to see a floating object above a chapter title.

```
877 \global\@topnum\z@
```

Then we suppress the indentation of the first paragraph by setting the switch \@afterindent to false. We use \secdef to specify the macros to use for actually setting the chapter title.

```
878 \Qafterindentfalse
879 \secdef\Qchapter\Qschapter}
```

\@chapter

This macro is called when we have a numbered chapter. When secnum depth is larger than -1 and, in the book class,  $\mbox{\@mainmatter}$  is true, we display the chapter number. We also inform the user that a new chapter is about to be typeset by writing a message to the terminal.

```
880 \def\@chapter[#1]#2{%
        \ifnum \c@secnumdepth >\m@ne
881
882 (boek)
                \if@mainmatter
883
            \refstepcounter{chapter}%
884
            \typeout{\@chapapp\space\thechapter.}%
            \addcontentsline{toc}{chapter}%
885
                            {\bf \{\protect\numberline\{\thechapter\}\toc@font0\ \#1\}\%}
886
887 (*boek)
888
            \addcontentsline{toc}{chapter}{\toc@font0 #1}%
889
890
891 (/boek)
892
        \else
```

```
893 \addcontentsline{toc}{chapter}{\toc@font0 #1}%
894 \fi
```

After having written an entry to the table of contents we store the (alternative) title of this chapter with \chaptermark and add some white space to the lists of figures and tables.

```
kotaptermark{#1}%
koddtocontents{lof}{\protect\addvspace{10\p@}}%
koddtocontents{lot}{\protect\addvspace{10\p@}}%
koddtocontents{lot}{\protect\addvspace{10\p@}}%
```

Then we call upon \@makechapterhead to format the actual chapter title. We have to do this in a special way when we are in twocolumn mode in order to have the chapter title use the entire \textwidth. In one column mode we call \@afterheading which takes care of suppressing the indentation.

```
898 \if@twocolumn
899 \@topnewpage[\@makechapterhead{#2}]%
900 \else
901 \@makechapterhead{#2}%
902 \@afterheading
903 \fi}
```

\ChapFont The font used to typeset the chapters is stored in this maro.

904 \newcommand\*\ChapFont{\bfseries}

\@makechapterhead

The macro above uses  $\mbox{\@makechapterhead}\mbox{\/}(text)$  to format the heading of the chapter.

We begin by leaving some white space. The we open a group in which we have a paragraph indent of 0pt, and in which we have the text set ragged right. We also reset the font.

```
905 \def\@makechapterhead#1{%

906 \!boek\ \vspace*{50\p@ \@plus 5\p@}%

907 \doek\ \vspace*{50\p@ \@plus 20\p@}%

908 {\setlength\parindent{\z@}%

909 \setlength\parskip {\z@}%

910 \head@style \normalfont
```

Then we check whether the number of the chapter has to be printed. If so we leave some whitespace between the chapternumber and its title.

```
911 \ifnum \c@secnumdepth >\m@ne

912 \langle \langle \frac{\text{boek}}{\text{large} \text{ChapFont \@chapapp{} \thechapter}

913 \quad \par\nobreak

914 \quad \par\nobreak

915 \quad \vskip 20\p@

916 \langle \boek \quad \frac{\text{fi}}{\text{917}}
```

Now we set the title in a large bold font. We prevent a pagebreak at this point and leave some whitespace before the text begins.

```
918 \Large \ChapFont #1\par

919 \nobreak

920 \vskip 40\p@

921 }}
```

\Oschapter This macro is called when we have an unnumbered chapter. It is much simpler than \Ochapter because it only needs to typeset the chapter title.

```
922 \def\@schapter#1{\if@twocolumn

923 \@topnewpage[\@makeschapterhead{#1}]%

924 \else

925 \@makeschapterhead{#1}%

926 \@afterheading

927 \fi}
```

\@makeschapterhead

The macro above uses  $\mbox{@makeschapterhead}\mbox{$\langle text \rangle$}$  to format the heading of the chapter. It is similar to  $\mbox{@makeschapterhead}$  except that it never has to print a chapter number.

```
928 \def\@makeschapterhead#1{\%}
929 (!boek)
           \vspace*{50\p@\@plus 5\p@}%
930 (boek)
           \vspace*{50\p@\@plus 20\p@}%
931
     {\setlength\parindent{\z0}%
932
       \setlength\parskip{\z0}%
933
       \head@style
       \normalfont
934
       \Large \ChapFont #1\par
935
936
       \nobreak
937
       \vskip 40\p@
     }}
938
939 (/rapport | boek)
```

#### 8.2.7 Lower level headings

These commands all make use of \@startsection.

\section

This gives a normal heading with white space above the heading (the whitespace below the heading will be generated by the \parskip that is inserted at the start of the first paragraph), the title set in \large\bfseries, and no indentation on the first paragraph.

```
940 \newcommand*\section{%
941 (*type1 | type3)
     \@startsection {section}{1}{\z@}%
942
        {-2\baselineskip\cplus -1\baselineskip\cplus -.5\baselineskip}\%
943
944 (/type1 | type3)
945 (*type2)
946
     \@startsection {section}{1}{\unitindent}%
        {2\baselineskip\@plus \baselineskip \@minus .5\baselineskip}%
948 \langle /type2 \rangle
949 (type1)
              {.5\baselineskip}%
                    {.01\baselineskip}%
950 (type2 | type3)
        {\normalfont\large\SectFont}}
```

\SectFont The font used to typeset the sections is stored in this maro.

```
952 \newcommand*\SectFont{\bfseries}
```

\subsection This gives a normal heading with white space above the heading, the title set in \normalsize\bfseries, and no indentation on the first paragraph.

```
953 \newcommand*\subsection{% 954 \langle *type1 \mid type3 \rangle
```

```
{-1\baselineskip\@plus -.5\baselineskip \@minus -.25\baselineskip}%
                               956
                               957 (/type1 | type3)
                               958 \langle *type2 \rangle
                                          \@startsection{subsection}{2}{\unitindent}%
                               959
                                              {1\baselineskip\@plus .5\baselineskip \@minus .25\baselineskip}%
                               961 (/type2)
                               962 (type1)
                                                          {.25\baselineskip}%
                                                                      {.01\baselineskip}%
                               963 (type2 | type3)
                                              {\normalfont\normalsize\SSectFont}}
        \SSectFont The font used to typeset the subsections is stored in this maro.
                               965 \newcommand*\SSectFont{\bfseries}
\subsubsection This gives a normal heading with white space above the heading, the title set in
                                 \normalsize\tm, and no indentation on the first paragraph.
                               966 \newcommand*\subsubsection{%
                               967 (*type1 | type3)
                                         \@startsection{subsubsection}{3}{\z@}%
                                              {-1\baselineskip plus -.5\baselineskip minus -.25\baselineskip}%
                               969
                               970 (/type1 | type3)
                               971 (*tvpe2)
                                          \@startsection{subsubsection}{3}{\unitindent}%
                               972
                                              {1\baselineskip plus .5\baselineskip minus .25\baselineskip}%
                               974 (/type2)
                               975 (type1)
                                                          {.25\baselineskip}%
                               976 (type2 | type3)
                                                                      {.01\baselineskip}%
                                              {\normalfont\normalsize\SSSectFont}}
      \SSSectFont The font used to typeset the subsubsections is stored in this maro.
                               978 \(\artikel & (type1 | type3) \)\\newcommand*\\SSSectFont{\rmfamily}
                               979 \type2 \newcommand*\SSSectFont{\scshape}
                               980 \(\rangle\) \(
       \paragraph This gives a run-in heading with white space above and to the right of the heading,
                                 the title set in \normalsize\slshape.
                               981 \newcommand*\paragraph{%
                               982 \langle !type2 \rangle \@startsection{paragraph}{4}{\z@}%
                               983 \langle type2 \rangle \@startsection{paragraph}{4}{\unitindent}%
                                              {3.25ex \@plus1ex \@minus.2ex}%
                               984
                               985
                                              {-1em}%
                                              {\normalfont\normalsize\ParaFont}}
          \ParaFont The font used to typeset the paragraphs is stored in this maro.
                               987 \langle !type2 \rangle \newcommand* \ParaFont{\slshape}
                               988 (type2) \newcommand*\ParaFont{\scshape}
 \subparagraph This gives an indented run-in heading with white space above and to the right of
                                 the heading, the title set in \normalsize\slshape.
                               989 \newcommand*\subparagraph{%
                               990 (!type2)
                                                     \@startsection{subparagraph}{5}{\parindent}%
                               991 \type2 \ \@startsection{subparagraph}{5}{\unitindent}%
                                             992
```

\@startsection{subsection}{2}{\z@}%

955

```
993 {-1em}%
994 {\normalfont\normalsize\SParaFont}}

\SParaFont The font used to typeset the subparagraphs is stored in this maro.
995 \newcommand*\SParaFont{\slshape}
```

\Headingfonts To change the fonts that are used to typeset the title,part, chapter and section headings this macro can be used.

```
997 \newcommand*\HeadingFonts[7]{%
998
      \renewcommand*\TitleFont{#1}%
999
      \renewcommand*\PartFont{#2}%
1000
      \renewcommand*\SectFont{#3}%
      \renewcommand*\SSectFont{#4}%
1001
1002
      \renewcommand*\SSSectFont{#5}%
1003
      \renewcommand*\ParaFont{#6}%
      \renewcommand*\SParaFont{#7}}
1004
1005 \langle / \text{artikel} \rangle
1006 (*rapport | boek)
1007 \newcommand*\HeadingFonts[8]{%
1008
      \renewcommand*\TitleFont{#1}%
1009
      \renewcommand*\PartFont{#2}%
      \renewcommand*\ChapFont{#3}%
1010
      \renewcommand*\SectFont{#4}%
1011
1012
      \renewcommand*\SSectFont{#5}%
      \renewcommand*\SSSectFont{#6}%
1013
      \renewcommand*\ParaFont{#7}%
1014
1015
      \renewcommand*\SParaFont{#8}}
1016 (/rapport | boek)
```

#### 8.3 Lists

# 8.3.1 General List Parameters

The following commands are used to set the default values for the list environment's parameters. See the LATEX manual for an explanation of the meanings of the parameters. Defaults for the list environment are set as follows. First, \rightmargin, \listparindent and \itemindent are set to 0pt. Then, for a Kth level list, the command \@listK is called, where 'K' denotes 'i', 'i', ..., 'vi'. (I.e., \@listiii is called for a third-level list.) By convention, \@listK should set \leftmargin to \leftmarginK.

\leftmargin For efficiency, level-one list's values are defined at top level, and \Clisti is defined \leftmargini to set only \leftmargin.

```
\leftmarginii 1017 \leftmargini \leftmargini \{\unitindent\}\leftmarginiii 1018 \leftmargini\leftmargini \{\unitindent\}\leftmarginiii 1018 \leftmargin\leftmarginii \{\unitindent\}\leftmarginiv 1019 \setlength\leftmarginiii \{\unitindent\}\leftmarginiv 1020 \setlength\leftmarginiii \{\unitindentmargin\}\leftmarginvi 1021 \setlength\leftmarginiv \{\unitindentmargin\}\ 1022 \setlength\leftmarginvi \{\unitindentmargin\}\ 1023 \setlength\leftmarginvi \{1em\}\

Here we set the top level leftmargin.

1024 \setlength\leftmargin \{\leftmargini\}\}
```

\labelsep \labelsep is the distance between the label and the text of an item; \labelwidth \labelwidth is the width of the label.

```
\label{locality} $1025 \ \left(\frac{5\p0}{1026\ \end{1000}} \right) $$1026 \ \cline{1000} \ \cline{1000} $$1027 \addtolength \abelwidth{-\abelsep}$$
```

\partopsep When the user leaves a blank line before the environment an extra vertical space of \partopsep is inserted, in addition to \parskip and \topsep.

```
1028 \setlength\partopsep{\z0}
```

\topsep Extra vertical space, in addition to \parskip, added above and below list and paragraphing environments.

```
1029 \stlength\topsep{\z0}
```

\Obeginparpenalty These penalties are inserted before and after a list or paragraph environment.

They are set to a bonus value to encourage page breaking at these points.

\@itempenalty This penalty is inserted between list items.

```
1030 \@beginparpenalty -\@lowpenalty
1031 \@endparpenalty -\@lowpenalty
1032 \@itempenalty -\@lowpenalty
```

\Olisti \Olisti defines values of \leftmargin, \parsep, \topsep, and \itemsep, etc. \OlistI for the lists that appear on top-level. Its definition is modified by the font-size commands (eg within \small the list parameters get "smaller" values).

For this reason listI is defined to hold a saved copy of listi so that \normalsize can switch all parameters back.

```
1033 \def\@listi{%
1034 (!type2)
                         \leftmargin\unitindent
1035 (type2)
                         \leftmargin\leftmargini
1036 (!type2)
                         \labelsep.5em%
1037 (type2)
                         \labelsep.45em%
1038
                 \labelwidth\leftmargin
1039
                  \advance\labelwidth-\labelsep
1040
                  \parsep \z@
1041 \langle !type3 \rangle
                         \topsep 0\p@ \@plus\p@
                         \topsep -.5\parskip \@plus\p@
1042 (type3)
                  \itemsep 0\p@ \@plus1\p@}
1043
1044 \let\@listI\@listi
```

We initialise these parameters although strictly speaking that is not necessary.  ${\tt 1045} \ {\tt 01isti}$ 

\@listii Here are the same macros for the higher level lists. Note that they don't have \@listiii saved versions and are not modified by the font size commands. In other words this class assumes that nested lists only appear in \normalsize, i.e. the main \@listv document size.

```
0\p@ \@plus\p@
1051 (!type3)
                           \topsep
1052 \langle type3 \rangle
                          \topsep
                                      -.5\parskip\plus\p0
1053
                                \z@
                    \parsep
1054
                   \itemsep
                                \z@ \@plus\p@}
1055 \def\@listiii{\leftmargin\leftmarginiii
1056 (!type2)
                           \labelsep .5em%
1057 (type2)
                          \labelsep .3em%
1058
                   \labelwidth\leftmarginiii
                    \advance\labelwidth-\labelsep
1059
1060 (!type3)
                           \topsep
                                       0\p@ \@plus\p@
1061 (type3)
                          \topsep
                                      -.5\parskip\plus\p0
1062
                    \parsep
                                \z0
                   \partopsep \z@ \@plus\p@
1063
1064
                   \itemsep
                               \z@ \@plus\p@}
1065 \def\@listiv {\leftmargin\leftmarginiv
1066 (!type2)
                           \labelsep .5em%
1067 (type2)
                          \labelsep .3em%
1068
                   \labelwidth\leftmarginiv%
                    \advance\labelwidth-\labelsep
1069
1070 \langle !type3 \rangle
                                       0\p@ \@plus\p@
                           \topsep
                                      -.5\parskip\@plus\p0
1071 (type3)
                          \topsep
                   \parsep
                                \z@
1072
1073
                   \itemsep
                                \z0 \plus p0
1074 \def\@listv
                  {\leftmargin\leftmarginv
1075 (!type2)
                           \labelsep .5em%
1076 (type2)
                          \labelsep .3em%
1077
                    \labelwidth\leftmarginv
1078
                    \advance\labelwidth-\labelsep%
1079 (!type3)
                           \topsep
                                       0\p@ \@plus\p@
                                      -.5\parskip\@plus\p@
1080 (type3)
                          \topsep
                   \parsep
                                \z0
1081
1082
                                \z0 \plus p0
                   \itemsep
1083 \def\@listvi {\leftmargin\leftmarginvi
                           \labelsep .5em
1084 (!type2)
1085 (type2)
                          \labelsep .3em
1086
                    \labelwidth\leftmarginvi
1087
                    \advance\labelwidth{-\labelsep}%
1088 (!type3)
                           \topsep
                                      0\p@ \@plus\p@
1089 (type3)
                          \topsep
                                      -.5\parskip\@plus\p@
1090
                    \parsep
                                \z0
1091
                   \itemsep
                                \z@ \@plus\p@}
```

#### 8.3.2 Enumerate

The enumerate environment uses four counters: enumi, enumii, enumiii and enumiv, where enumN controls the numbering of the Nth level enumeration.

```
\theenumii The counters are already defined in latex.dtx, but their representation is changed \theenumii here.
\theenumiii 1092 \renewcommand*\theenumii{\Qarabic\cQenumi} \theenumiv 1093 \renewcommand*\theenumii{\Qarabic\cQenumii} \1094 \renewcommand*\theenumiii{\Qroman\cQenumiii} \1095 \renewcommand*\theenumiv{\QAlph\cQenumiv}
```

```
\labelenumi The label for each item is generated by the commands
               \labelenumi ... \labelenumiv.
 \labelenumii
\verb|\labelenumiii|_{1096} \verb|\newcommand*| labelenumi{\theenumi.}|
 \verb|\labelenumiv| 1097 \verb|\labelenumii{(\theenumii)}|
              1098 \newcommand*\labelenumiii{\theenumiii.}
              1099 \newcommand*\labelenumiv{\theenumiv.}
    \p@enumii The expansion of \p@enumN\theenumN defines the output of a \ref command
   \p@enumiii when referencing an item of the Nth level of an enumerated list.
    \verb|\p@enumiv|_{1100} \verb|\command*\p@enumii{\theenumi}|
              1101 \renewcommand*\p@enumiii{\theenumi(\theenumii)}
              1102 \renewcommand*\p@enumiv{\p@enumiii\theenumiii}
               We want to have different label positioning on different levels of list. To acheive
                this we have to redefine the enumerate environment.
              1103 \renewenvironment{enumerate}{%
              1104
                    \ifnum \@enumdepth >3
              1105
                       \@toodeep
                     \else
              1106
              1107
                       \advance\@enumdepth \@ne
              1108
                       \edef\@enumctr{enum\romannumeral\the\@enumdepth}%
              1109
                       \list{\csname label\@enumctr\endcsname}
              1110
                            {\usecounter{\@enumctr}%
              1111 (type1)
                                     \ifnum \@listdepth=1
              1112 (*type1 | type3)
              1113
                                \if@revlabel
              1114
                                   \label{label} $$ \def\makelabel$#1{\hskip .5}\unitindent{$\#1\hfil}}%
              1115
                                 \else
              1116 (!type3)
                                          \def\makelabel##1{\hfil##1}
              1117 (type3)
                                         \def\makelabel##1{##1\hfil}
              1118
                                 \fi
              1119 (/type1 | type3)
              1120 (type1)
                                     \else
                                             \def\makelabel##1{##1\hfil}%
              1121 (type1 | type2)
              1122 (type1)
                                     \fi
              1123
                            ጉ%
                    \fi}
              1124
                We try to suppress spaces after these list constructs.
              1125 {\global\@ignoretrue \endlist}
                8.3.3
                       Itemize
               Itemization is controlled by four commands: \labelitemi, \labelitemii,
                \labelitemiii, and \labelitemiv, which define the labels of the various item-
 \labelitemii
               ization levels: the symbols used are bullet, bold en-dash, asterisk and centred
\labelitemiii
 \labelitemiv
               dot.
              1126 \newcommand*{\labelitemi}{\textbullet}
              1127 \newcommand*{\labelitemii}{\normalfont\bfseries \textendash}
```

1128 \newcommand\*{\labelitemiii}{\textasteriskcentered}
1129 \newcommand\*{\labelitemiv}{\textperiodcentered}

itemize We want to have differen label positioning on different levels of list. To acheive this we have to redefine the itemize environment.

```
1130 \renewenvironment{itemize}{%
      \ifnum \@itemdepth >3
1131
         \@toodeep
1132
      \else
1133
         \advance\@itemdepth \@ne
1134
1135
         \edef\@itemitem{labelitem\romannumeral\the\@itemdepth}%
1136
         \list{\csname\@itemitem\endcsname}%
1137
1138 (type1)
                        \ifnum \@listdepth=1\relax
1139 (*type1 | type3)
1140
                  \if@revlabel
                    \label{lambda} $$ \def\makelabel{lambda} .5\mitindent{$\#1\hfil}\else
1141
                           \def\makelabel##1{\hfil##1}
1142 (type1)
                           \def\makelabel##1{##1\hfil}
1143 \langle type3 \rangle
                  \fi
1144
1145 (/type1 | type3)
1146 (type1)
                       \else
1147 (type1 | type2)
                                \def\makelabel##1{##1\hfil}
                       \fi
1148 (type1)
1149
                }%
1150
     \fi}
```

We try to suppress spaces after these list constructs.

1151 {\global\@ignoretrue \endlist}

### 8.3.4 Description

description The description environment is defined here – while the itemize and enumerate environments are defined in latex.dtx.

```
1152 \newenvironment{description}
1153 {\list{}{\labelwidth\z@ \itemindent-\leftmargin}
1154 \leftmakelabel\descriptionlabel}}
1155 {\endlist}
```

\descriptionlabel To change the formatting of the label, you must redefine \descriptionlabel.

1156 \newcommand\*\descriptionlabel[1]{\hspace\labelsep \bfseries #1}

# 8.4 Adapting existing environments

Because we globally set \topsep to zero, we need to modify the definitions of a number of environments slightly to get a litle whitespace around them in the document classes artikel1 and rapport1.

center Add a litle surrounding whitespace.

```
1157 \( *type1 \)
1158 \( def \center \)
1159 \( \text{topsep=.25} \text{baselineskip \Qplus .1} \text{baselineskip} \)
1160 \( \text{centering \item[]} \\
1161 \\ \trivlist \centering \item[] \\
1162 \\ \text{let} \endcenter \endtrivlist} \\
```

```
flushleft Add a litle surrounding whitespace.
```

```
1163 \def\flushleft
1164 {\topsep=.25\baselineskip \@plus .1\baselineskip
1165 \@minus .1\baselineskip
1166 \trivlist \raggedright\item[]}
1167 \let\endflushleft=\endtrivlist
```

flushright Add a litle surrounding whitespace.

verbatim In verbatim we add a little surrounding whitespace, —which for artikel3 and rapport3 is negative to compensate for the positive \parskip—but also an indent for the artikel1 and rapport1 document classess.

```
1174 \def\verbatim{%
1175 (*type1 | type2)
      \topsep=.25\baselineskip \@plus .1\baselineskip
                                   \@minus .1\baselineskip
1177
        \@verbatim
1178
1179 (/type1 | type2)
              \leftskip\unitindent
1180 (type1)
               \left| \right| 
1181 (type2)
1182 (*type3)
1183
      \topsep=-.5\parskip
1184
      \@verbatim
1185 (/type3)
      \frenchspacing\@vobeyspaces \@xverbatim}
1187 \langle type1 \rangle \det \operatorname{if@newlist} \operatorname{ifendtrivlist}
```

# 8.5 Defining new environments

#### 8.5.1 Abstract

abstract When we are producing a separate titlepage we also put the abstract on a page of its own. It will be centred vertically on the page.

Note that this environment is not defined for boeks.

```
1188 (!boek)\if@titlepage
1189 \newenvironment{abstract}{%}
1190 \titlepage
1191 \null\vfil
1192 \hbox{\SectFont \abstractname}
1193 \noindent\ignorespaces}
1194 {\par\vfil\null\endtitlepage}
```

When we are not making a seperate titlepage –the default for the artikel document classes– we have to check if we are in twocolumn mode. In that case the abstract is set as a \section\*, otherwise the abstract is typeset flushleft, an amount \unitindent smaller as the normal text.

```
1195 (*artikel | rapport)
```

```
1196 \else
      \newenvironment{abstract}{%
1197
           \if@twocolumn
1198
1199
             \section*{\abstractname}%
1200
           \else
             \small
1201
1202 (*type1 | type3)
             \bgroup\rightskip=\unitindent
1203
1204
             \hbox{\SectFont \abstractname}%
             \noindent\ignorespaces
1205
1206 (/type1 | type3)
 As always, the artikel2 document class has a different implementation.
1207 (*type2)
             \hbox{\hskip\unitindent\SectFont \abstractname}%
1208
             \list{}{\setlength\listparindent{\unitindent}%
1209
                      \setlength\parindent
1210
                                                 \{ | z@ \} \%
                      \setlength\leftmargin
                                                 {\unitindent}%
1211
1212
                      \setlength\rightmargin {\unitindent}%
1213
                      \setlength\parsep
                                                 \{\z0\}\}\%
1214
             \item[]%
1215 (/type2)
1216
           \{fi\}
 Which implies that the definition of \end{abstract} is also different.
1217 (!type2)
                  {\if@twocolumn\else\par\egroup\fi}
1218 (type2)
                  {\if@twocolumn\else\par\endlist\fi}
1219 \fi
1220 (/artikel | rapport)
```

#### 8.5.2 Verse

The verse environment is defined by making clever use of the list environment's parameters. The user types \\ to end a line. This is implemented by \let'ing \\ equal \@centercr.

```
1221 \newenvironment{verse}
                    {\let\\\@centercr
1222
                     \left( \right) 
1223
                             \itemindent-1.5em%
1224
                             \listparindent\itemindent
1225
                             \rightmargin\leftmargin
1226
1227
                             \advance\leftmargin1.5em}%
1228
                     \item\relax}
1229
                    {\endlist}
```

#### 8.5.3 Quotation

quotation The quotation environment is also defined by making clever use of the list environment's parameters. The lines in the environment are set smaller than \textwidth. The first line of a paragraph inside this environment is indented.

#### 8.5.4 Quote

quote The quote environment is like the quotation environment except that paragraphs are not indented.

```
1240 \newenvironment{quote}
1241 {\list{}\rightmargin\leftmargin}%
1242 \item\relax}
1243 {\endlist}
```

#### 8.5.5 Theorem

\@begintheorem \@opargbegintheorem \@endtheorem These document classes have a slightly modified theorem environment style. Surrounding whitespace is added and an initialisation of \labelsep. Finally a slanted font instead of an italic font is used.

```
1244 \def\@begintheorem#1#2{%

1245 \vskip\baselineskip \labelsep=.5em%

1246 \trivlist

1247 \item[\hskip \labelsep{\bfseries #1\ #2}]\slshape}

1248 \def\@opargbegintheorem#1#2#3{%

1249 \vskip\baselineskip \labelsep=.5em%

1250 \trivlist

1251 \item[\hskip \labelsep{\bfseries #1\ #2\ (#3)}]\slshape}

1252 \def\@endtheorem{\endtrivlist \vskip\baselineskip}
```

#### 8.5.6 Titlepage

titlepage In the normal environments, the titlepage environment does nothing but start and end a page, and inhibit page numbers. It also resets the page number to zero. This is incorrect since it results in using the page parameters for a right-hand page but it is the way it was. In two-column style, it still makes a one-column page.

```
1253 \newenvironment{titlepage}
1254
1255 (boek)
                 \cleardoublepage
           \if@twocolumn
1256
1257
             \@restonecoltrue\onecolumn
1258
           \else
1259
             \@restonecolfalse\newpage
1260
           \fi
           \thispagestyle{empty}%
1261
           \if@compatibility
1262
1263
             \setcounter{page}\z@
1264 (*artikel | rapport)
1265
           \else
             \setcounter{page}\@ne
1266
1267 (/artikel | rapport)
```

```
1268 \fi}  
1269 {\if@restonecol\twocolumn \else \newpage \fi  
1270 \langle artikel \mid rapport \rangle \setcounter{page}\@ne  
1271 }
```

#### 8.5.7 Appendix

\appendix The \appendix command is not really an environment, it is a macro that makes some changes in the way things are done.

In the artikel document classes the \appendix command must do the following:

- reset the section and subsection counters to zero,
- redefine \thesection to produce alphabetic appendix numbers.

```
1272 \( \*\artikel \)
1273 \( \newcommand*\appendix\{\par} \)
1274 \( \setcounter\{section\}\{0\}\)
1275 \( \setcounter\{subsection\}\{0\}\)
1276 \( \gdef\thesection\{\QAlph\c@section\}\}
1277 \( \/\artikel \)
```

In the rapport and book document classes the **\appendix** command must do the following:

- reset the chapter and section counters to zero,
- set \@chapapp to \appendixname (for messages),
- redefine the chapter counter to produce appendix numbers,
- possibly redefine the \chapter command if appendix titles and headings are to look different from chapter titles and headings.

```
1278 \\ *rapport | boek \\
1279 \ \newcommand*\appendix{\par}
1280 \ \setcounter{chapter}{0}\%
1281 \ \setcounter{section}{0}\%
1282 \ \gdef\@chapapp{\appendixname}\%
1283 \ \gdef\thechapter{\QAlph\c@chapter}}
1284 \\ /rapport | boek \\
```

#### 8.6 Setting parameters for existing environments

### 8.6.1 Array and tabular

\arraycolsep The columns in an array environment are separated by 2\arraycolsep.

1285 \setlength\arraycolsep{5\p0}

\tabcolsep The columns in an tabular environment are separated by 2\tabcolsep. 1286 \setlength\tabcolsep{6\p0}

\arrayrulewidth The width of rules in the array and tabular environments is given by \arrayrulewidth.

1287 \setlength\arrayrulewidth{.4\p0}

\doublerulesep The space between adjacent rules in the array and tabular environments is given by \doublerulesep.

1288 \setlength\doublerulesep{2\p0}

#### 8.6.2 Tabbing

\tabbingsep This controls the space that the \' command puts in. (See LATEX manual for an explanation.)

1289 \setlength\tabbingsep{\labelsep}

### 8.6.3 Minipage

\mathrm{Ominipagerestore} The macro \mathrm{Ominipagerestore} is called upon entry to a minipage environment to set up things that are to be handled differently inside a minipage environment.

\@mpfootins Minipages have their own footnotes; \skip\@mpfootins plays same rôle for footnotes in a minipage as \skip\footins does for ordinary footnotes.

1296 \skip\@mpfootins = \skip\footins

#### 8.6.4 Framed boxes

\fboxsep The space left by \fbox and \framebox between the box and the text in it.

\fboxrule The width of the rules in the box made by \fbox and \framebox.

```
1297 \setlength\fboxsep{3\p0}
1298 \setlength\fboxrule{.4\p0}
```

#### 8.6.5 Equation and equarray

\theequation When within chapters, the equation counter will be reset at beginning of a new chapter and the equation number will be prefixed by the chapter number.

This code must follow the **\chapter** definition, or more exactly the definition of the chapter counter.

```
\label{lem:command*} $$1300 \end{command*} \end{command*} $$1300 \end{command*} \end{command*} $$1301 \end{command*} \end{command*} $$1302 \end{command*} $$1303 \end{command*} \end{command*} \end{command*} \end{command*} $$1304 \end{command*} \end{command*} \end{command*} $$1304 \end{command*} \end{command*} \end{command*} $$1304 \end{command*} \end{command*} $$1304 \end{command*} \end{command*} $$1304 \end{command*} \end{command*} \end{command*} $$1304 \end{command*} \end{command*} \end{command*} $$1304 \end{command*} \end{command*} \end{command*} \end{command*} $$1304 \end{command*} \end{command*} \end{command*} $$1304 \end{command*} \end{co
```

\jot \jot is the extra space added between lines of an equarray environment. The default value is used.

```
1305 % \setlength\jot{3pt}
```

\Ceqnnum The macro \Ceqnnum defines how equation numbers are to appear in equations. Again the default is used.

```
1306 % \def\@eqnnum{(\theequation)}
```

## 8.7 Floating objects

The file latex.dtx only defines a number of tools with which floating objects can be defined. This is done in the document class. It needs to define the following macros for each floating object of type TYPE (e.g., TYPE = figure).

\fps@TYPE The default placement specifier for floats of type TYPE.

\ftype@TYPE The type number for floats of type TYPE. Each TYPE has associated a unique positive TYPE number, which is a power of two. E.g., figures might have type number 1, tables type number 2, programs type number 4, etc.

\ext@TYPE The file extension indicating the file on which the contents list for float type TYPE is stored. For example, \ext@figure = 'lof'.

\fnum@TYPE A macro to generate the figure number for a caption. For example, \fnum@TYPE == 'Figure \thefigure'.

 $\mbox{\constraint} \mbox{\constraint} \mbox{\cons$ 

The actual environment that implements a floating object such as a figure is defined using the macros \Qfloat and \endQfloat, which are defined in latex.dtx.

An environment that implements a single column floating object is started with  $\footnote{Ofloat{TYPE}[\langle placement \rangle]}$  of type TYPE with  $\langle placement \rangle$  as the placement specifier. The default value of  $\langle PLACEMENT \rangle$  is defined by  $\footnote{Ofloat{TYPE}}$ .

The environment is ended by  $\end@float$ . E.g.,  $\figure == \end@float$ figure,  $\endfigure == \end@float$ .

#### **8.7.1** Figure

Here is the implementation of the figure environment.

\coefigure First we have to allocate a counter to number the figures. In the rapport and book document classes the figures are numbered per chapter.

```
1307 (*artikel)
1308 \newcounter{figure}
1309 \renewcommand*\thefigure{\@arabic\c@figure}
1310 (/artikel)
1311 (*rapport | boek)
1312 \newcounter{figure}[chapter]
1313 \renewcommand*\thefigure{%}
1314 \ifnum\c@chapter>\z@\thechapter.\fi\@arabic\c@figure}
1315 (/rapport | boek)
```

\fps@figure Here are the parameters for the floating objects of type 'figure'.

```
\ftype@figure 1316 \def\fps@figure{tbp}
\ext@figure 1317 \def\ftype@figure{1}
\num@figure 1318 \def\ext@figure{lof}

1319 \def\fnum@figure{\figurename\nobreakspace\thefigure}
```

figure And the definition of the actual environment. The form with the \* is used for figure\* double column figures.

```
1320 \newenvironment{figure}
1321 {\@float{figure}}
1322 {\end@float}
1323 \newenvironment{figure*}
1324 {\@dblfloat{figure}}
1325 {\end@dblfloat}
```

#### 8.7.2 Table

Here is the implementation of the table environment. It is very much the same as the figure environment.

\c@table First we have to allocate a counter to number the tables. In the rapport and book document classes the tables are numbered per chapter.

```
1326 \*artikel\\
1327 \newcounter{table}
1328 \renewcommand*\thetable{\@arabic\c@table}
1329 \/artikel\\
1330 \**rapport | boek\\\
1331 \newcounter{table}[chapter]
1332 \renewcommand*\thetable{\%}
1333 \ifnum\c@chapter>\z@\thechapter.\fi\@arabic\c@table}
1334 \/rapport | boek\\\\
```

\fps@table Here are the parameters for the floating objects of type 'table'.

table And the definition of the actual environment. The form with the \* is used for table\* double column tables.

```
1339 \newenvironment{table}
1340 {\Qfloat{table}}
1341 {\endQfloat}
1342 \newenvironment{table*}
1343 {\Qdblfloat{table}}
1344 {\endQdblfloat}
```

#### 8.7.3 Captions

\@makecaption

The \caption command calls \@makecaption to format the caption of floating objects. It gets two arguments,  $\langle number \rangle$ , the number of the floating object and  $\langle text \rangle$ , the text of the caption. Usually  $\langle number \rangle$  contains a string such as 'Figure 3.2'. The macro can assume it is called inside a \parbox of right width, with \normalsize.

\abovecaptionskip These lengths contain the amount of white space to leave above and below the \belowcaptionskip caption.

1345 \newlength\abovecaptionskip

```
1346 \newlength\belowcaptionskip
1347 \setlength\abovecaptionskip{10\p@}
1348 \setlength\belowcaptionskip{0\p@}
```

The definition of this macro is \long in order to allow more then one paragraph in a caption.

```
1349 \long\def\@makecaption#1#2{% 1350 \vskip\abovecaptionskip
```

We want to see if the caption fits on one line on the page, therefore we first typeset it in a temporary box.

```
\sbox\@tempboxa{{\CaptionLabelFont#1:} \CaptionTextFont#2}%
```

We can the measure its width. It that is larger than the current \hsize we typeset the caption as an ordinary paragraph.

```
1352 \ifdim \wd\@tempboxa >\hsize
1353 {\CaptionLabelFont#1:} \CaptionTextFont#2\par
```

If the caption fits, we center it. Because this uses an hbox directly in vertical mode, it does not execute the heverypar tokens; the only thing that could be needed here is resetting the 'minipage flag' so we do this explicitly.

```
1354 \else
1355 \global \@minipagefalse
1356 \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
1357 \fi
1358 \vskip\belowcaptionskip}
```

\CaptionLabelFont These macros can contain the fonts used for typesetting captions. By default they \CaptionTextFont do nothing.

```
1359 \newcommand*\CaptionLabelFont{\relax}
1360 \newcommand*\CaptionTextFont{\relax}
```

\CaptionFonts To change the fonts that are used to typeset captions this macro can be used.

```
1361 \newcommand*\CaptionFonts[2]{%
1362 \renewcommand*\CaptionLabelFont{#1}%
1363 \renewcommand*\CaptionTextFont{#2}%
1364 }
```

# 8.8 Font changing

Here we supply the declarative font changing commands that were common in LATEX version 2.09 and earlier. These commands work in text mode and in math mode. They are provided for compatibility, but one should start using the \text... and \math... commands instead. These commands are defined using \DeclareOldFontCommand, a command with three arguments: the user command to be defined; LATEX commands to execute in text mode and LATEX commands to execute in math mode.

\rm The commands to change the family. When in compatibility mode we select the \tt 'default' font first, to get LATEX2.09 behviour.

\bf The command to change to the bold series. One should use \mdseries to explicitly switch back to medium series.

```
1368 \verb|\DeclareOldFontCommand{\bf}{\normalfont\bfseries}{\mbox{\mbox{$\setminus$}}}
```

- \sl And the commands to change the shape of the font. The slanted and small caps
- \it shapes are not available by default as math alphabets, so those changes do nothing
- \sc in math mode. One should use \upshape to explicitly change back to the upright shape.

```
1369 \verb|\DeclareOldFontCommand{\{\it\}}{\{\normalfont\{\itshape\}\{\{\mathit\}\}\}}
```

- 1370 \DeclareOldFontCommand{\sl}{\normalfont\slshape}{\relax}
- 1371 \DeclareOldFontCommand{\sc}{\normalfont\scshape}{\relax}

\cal The commands \cal and \mit should only be used in math mode, outside math mode they have no effect. Currently the New Font Selection Scheme defines these commands to generate warning messages. Therefore we have to define them 'by hand'.

```
1372 \DeclareRobustCommand*\cal{\@fontswitch\relax\mathcal}
1373 \DeclareRobustCommand*\mit{\@fontswitch\relax\mathnormal}
```

\em The definition of \em is changed here to have slanted instead of italic fonts.

```
1374 \DeclareRobustCommand*\em{%
1375 \Qnomath\em
1376 \ifdim\fontdimen\Qne\font>\zQ
1377 \upshape
1378 \else
1379 \slshape
1380 \fi}
```

# 9 Cross Referencing

#### 9.1 Table of Contents, etc.

A \section command writes a \contentsline{section}{ $\langle title \rangle$ }{ $\langle page \rangle$ } command on the .toc file, where  $\langle title \rangle$  contains the contents of the entry and  $\langle page \rangle$  is the page number. If sections are being numbered, then  $\langle title \rangle$  will be of the form \numberline{ $\langle num \rangle$ }{ $\langle heading \rangle$ } where  $\langle num \rangle$  is the number produced by \thesection. Other sectioning commands work similarly.

```
A \caption command in a 'figure' environment writes
```

on the .lof file, where  $\langle num \rangle$  is the number produced by \thefigure and  $\langle caption \rangle$  is the figure caption. It works similarly for a 'table' environment.

The command \contentsline{ $\langle name \rangle$ } expands to \lq(name). So, to specify the table of contents, we must define \lq(lqchapter, \lq(lqchapter), \lq(lqchapter

```
\label{eq:contine} $$\operatorname{\operatorname{line}}_{\langle level\rangle}_{\langle indent\rangle}_{\langle numwidth\rangle}_{\langle title\rangle}_{\langle page\rangle}_{\langle page\rangle}_{\langle numwidth\rangle}_{\langle title\rangle}_{\langle page\rangle}_{\langle numwidth\rangle}_{\langle nu
```

 $\langle level \rangle$  An entry is produced only if  $\langle level \rangle <=$  value of the tocdepth counter. Note, \chapter is level 0, \section is level 1, etc.

 $\langle indent \rangle$  The indentation from the outer left margin of the start of the contents line.

 $\langle numwidth \rangle$  The width of a box in which the section number is to go, if  $\langle title \rangle$ includes a \numberline command.

\@pnumwidth \@tocrmarg \@dotsep This command uses the following three parameters, which are set with a \newcommand (so em's can be used to make them depend upon the font).

\@pnumwidth The width of a box in which the page number is put.

\@tocrmarg The right margin for multiple line entries. One wants \@tocrmarg ≥ \@pnumwidth

\@dotsep Separation between dots, in mu units. Should be defined as a number like 2 or 1.7

```
1381 \newcommand*\@pnumwidth{1.55em}
1382 \newcommand*\@tocrmarg {2.55em}
1383 \newcommand*\@dotsep{4.5}
1384 (artikel)\setcounter{tocdepth}{3}
1385 (!artikel)\setcounter{tocdepth}{2}
```

#### 9.1.1**Table of Contents**

\tableofcontents

This macro is used to request that LATEX produces a table of contents. In the rapport and book document classes the tables of contents, figures etc. are always set in single-column style.

```
1386 \newcommand*\tableofcontents{%
1387 (*rapport | boek)
1388
         \if@twocolumn
1389
           \@restonecoltrue\onecolumn
1390
           \@restonecolfalse
1391
1392
```

The title is set using the \chapter\* command, making sure that the running head -if one is required- contains the right information.

```
\chapter*{\contentsname}%
1394 (/rapport | boek)
1395 (artikel)
               \section*{\contentsname}%
1396
        \@mkboth{\MakeUppercase{\contentsname}}%
1397
                 {\MakeUppercase{\contentsname}}%
```

The the actual table of contents is made by calling \@starttoc{toc}. After that we restore twocolumn mode if necessary.

```
\@starttoc{toc}%
1399 (!artikel)
                 \if@restonecol\twocolumn\fi
        }
1400
```

\@starttoc The internal  $\LaTeX$  2 $\varepsilon$ macro \@starttoc needs to be adapted for the artike13 and rapport3 document classes, in order to deal with a the fact that for these document classes the \parskip is normally non-zero. We don't want that in the table of contents.

```
1401 (*type3)
1402 \def\@starttoc#1{\begingroup
      \makeatletter
1403
1404
      \parskip\z@
      \@input{\jobname.#1}%
1405
      \if@filesw
1406
        \expandafter\newwrite\csname tf@#1\endcsname
1407
1408
        \immediate\openout \csname tf@#1\endcsname \jobname.#1\relax
      \fi \global\@nobreakfalse \endgroup}
1409
1410 (/type3)
```

\Oregtocline These document classes use a different format for the table of contents than the standard classes from which they were developed. In order to acheive this different format we defined the macro \Oregtocline.

```
1411 \newcommand*\@regtocline[3]{%
      \ifnum #1>\c@tocdepth
      \else
1413
1414
        \vskip\z@\@plus.2\p@
1415
        {\hangindent\z@ \@afterindenttrue \interlinepenalty\@M
1416
         \leftskip\unitindent
         \rightskip\unitindent\@plus 1fil
1417
         \parfillskip\z@
1418
         \@tempdima\unitindent
1419
                \advance\@tempdima by \othermargin
1420 (type2)
1421
         \parindent\z@
1422
         \leavevmode
1423
         \hbox{}\hskip -\leftskip\relax#2\nobreak
1424
         \hskip 1em \nobreak{\slshape #3}\par
1425
         }%
      fi
1426
```

\numberline This internal macro is redefined for the artikel2 document class.

\toc@font The changed definition of \@sect that we use, selects a different font for the table of contents for the various header levels. It does this using \toc@font.

```
1428 \footnote{oldtoc}
      \newcommand*\toc@font[1]{\relax}
1429
1430 \else
      \newcommand*\toc@font[1]{%
1431
1432 (*artikel)
         \ifcase#1\relax
1433
1434 (type2)
                \Large\bfseries
1435
         \or\bfseries
1436
         \or\slshape
1437
         \or\rmfamily
1438 (/artikel)
1439 (*rapport | boek)
1440
         \ifcase#1\relax
         \bfseries
1441
1442
         \or\slshape
         \or\rmfamily
1443
1444 (/rapport | boek)
1445
         \fi}
```

\toc@case In the rapport and boek document classes, the entries for parts are typeset in capital letters in the new style of the table of contents. In the old style this isn't done. The macro \toc@case is used to switch this.

```
1447 \if@oldtoc
     \newcommand*\toc@case{\relax}
1449 \else
     \newcommand*\toc@case{\MakeUppercase}
1451 \fi
```

\lambda@part Each sectioning command needs an additional macro to format its entry in the table of contents, as described above. The macro for the entry for parts is defined in a special way.

> First we make sure that if a pagebreak should occur, it occurs before this entry. Also a little whitespace is added and a group begun to keep changes local.

First we have the definition from the standard classes.

```
1452 \if@oldtoc
1453 \newcommand*\l@part[2]{%
      \ifnum \c@tocdepth >-2\relax
               \addpenalty\@secpenalty
               \addpenalty{-\@highpenalty}%
1457
        \addvspace{2.25em \@plus\p@}%
1458
        \begingroup
```

The macro \numberline requires that the width of the box that holds the part number is stored in LATEX's scratch register \Otempdima. Therefore we put it there.

```
1459
          \setlength\@tempdima{3em}%
```

The we set \parindent to 0pt and use \rightskip to leave enough room for the pagenumbers. To prevent overfull box messages the \parfillskip is set to a negative value.

```
\parindent \z@ \rightskip \@pnumwidth
1460
          \parfillskip -\@pnumwidth
```

Now we can set the entry, in a large bold font. We make sure to leave vertical mode, set the part title and add the pagenumber, set flush right.

```
1462
          {\leavevmode
            \large \bfseries #1\hfil \hb@xt@\@pnumwidth{\hss #2}}\par
1463
```

Prevent a pagebreak immediately after this entry, but use \everypar to reset the \if@nobreak switch. Finally we close the group.

```
1464
                \nobreak
1465 \langle \mathsf{artikel} \rangle
                       \if@compatibility
1466
                \global\@nobreaktrue
1467
                \everypar{\global\@nobreakfalse\everypar{}}%
1468 \langle \mathsf{artikel} \rangle
                      \fi
          \endgroup
1469
  Then we can introduce our new definition.
```

1471 **\else** 

```
1472
       \newcommand*\l@part{%
1473
         \ifnum \c@tocdepth >-2\relax
```

```
 \begin{array}{llll} 1474 & \addpenalty @ secpenalty \\ 1475 & \addvspace & \addv
```

\lambda This macro formats the entries in the table of contents for chapters. It is very similar to \lambda Qpart

First we make sure that if a pagebreak should occur, it occurs *before* this entry. Also a little whitespace is added and a group begun to keep changes local.

Again we first present the 'standard' definition

```
1480 \langle *rapport | boek \rangle
1481 \if@oldtoc
1482 \newcommand*\l@chapter[2]{%
1483 \addpenalty{-\@highpenalty}%
1484 \vskip 1.0em \@plus\p@
```

The macro \numberline requires that the width of the box that holds the part number is stored in LATEX's scratch register \@tempdima. Therefore we put it there. We begin a group, and change some of the paragraph parameters.

```
1485 \setlength\Otempdima{1.5em}%

1486 \begingroup

1487 \parindent \zO \rightskip \Opnumwidth

1488 \parfillskip -\Opnumwidth
```

Then we leave vertical mode and switch to a bold font.

```
1489 \leavevmode \bfseries
```

Because we do not use \numberline here, we have do some fine tuning 'by hand', before we can set the entry. We discourage but not disallow a pagebreak immediately after a chapter entry.

```
\advance\leftskip\@tempdima
1490
        \hskip -\leftskip
1491
        #1\nobreak\hfil \nobreak\hb@xt@\@pnumwidth{\hss #2}\par
1492
        \penalty\@highpenalty
1493
       \endgroup}
1494
 Then we present our new definition.
1495 \else
1496
      \newcommand*\l@chapter{\@regtocline{0}}
1497 \fi
1498 (/rapport | boek)
```

\lambda In the artikel document classes the entry in the table of contents for sections looks much like the chapter entries for the rapport and book document classes.

First we make sure that if a pagebreak should occur, it occurs *before* this entry. Also a little whitespace is added and a group begun to keep changes local.

```
1499 (*artikel)
1500 \if@oldtoc
1501 \newcommand*\l@section[2]{%
1502 \addpenalty\@secpenalty
1503 \addvspace{1.0em \@plus\p@}%
```

The macro \numberline requires that the width of the box that holds the part number is stored in LATEX's scratch register \@tempdima. Therefore we put it there. We begin a group, and change some of the paragraph paramters.

```
\setlength\@tempdima{1.5em}%
                 1504
                 1505
                          \begingroup
                          \parindent \z@ \rightskip \@pnumwidth
                 1506
                          \parfillskip -\@pnumwidth
                 1507
                   Then we leave vertical mode and switch to a bold font.
                          \leaveymode \bfseries
                   Because we do not use \numberline here, we have do some fine tuning 'by hand',
                   before we can set the entry. We discourage but not disallow a pagebreak immedi-
                   ately after a chapter entry.
                          \advance\leftskip\@tempdima
                 1510
                          \hskip -\leftskip
                 1511
                         1\ \nobreak\hfil \nobreak\hb@xt@\@pnumwidth{\hss #2}\par
                 1512
                         \endgroup}
                   The new definition:
                 1513 \else
                 1514
                         \newcommand*\l@section{\@regtocline{1}}
                 1515 \fi
                 1516 (/artikel)
                   In the rapport and book document classes the definition for \logsetion is much
                   simpler.
                 1517 (*rapport | boek)
                 1518 \if@oldtoc
                 1519
                       \newcommand*\l@section
                                                     {\@dottedtocline{1}{1.5em}{2.3em}}
                 1520 \else
                 1521
                       \newcommand*\l@section
                                                     {\@regtocline{1}}
                 1522 \fi
                 1523 (/rapport | boek)
   \lambda ll lower level entries are defined using the macro \@dottedtocline or \@regtocline
\losubsubsection (see above).
    \label{logaragraph} $1524 \in \mathbb{C}$
 \l0subparagraph 1525 (*artikel)
                       \newcommand*\l@subsection
                                                     {\colored{0.3em}}{\colored{0.3em}}
                 1526
                       \newcommand*\l@subsubsection{\@dottedtocline{3}{3.8em}{3.2em}}
                 1527
                       \newcommand*\l@paragraph
                                                     {\colored{0.0em}}{4.1em}
                 1528
                       \newcommand*\l@subparagraph {\@dottedtocline{5}{10em}{5em}}
                 1529
                 1530 (/artikel)
                 1531 (*rapport | boek)
                       \newcommand*\l@subsection
                                                     {\@dottedtocline{2}{3.8em}{3.2em}}
                 1533
                       \newcommand*\l@subsubsection{\@dottedtocline{3}{7.0em}{4.1em}}
                 1534
                       \newcommand*\l@paragraph
                                                     {\@dottedtocline{4}{10em}{5em}}
                       \newcommand*\l@subparagraph {\@dottedtocline{5}{12em}{6em}}
                 1535
                 1536 (/rapport | boek)
                 1537 \else
                 1538
                       \newcommand*\l@subsection
                                                     {\@regtocline{2}}
                 1539
                       \newcommand*\l@subsubsection{\@regtocline{3}}
                       \newcommand*\l@paragraph
                                                     {\@regtocline{4}}
```

\newcommand\*\l@subparagraph {\@regtocline{5}}

1542 \fi

#### 9.1.2 List of figures

\listoffigures This macro is used to request that LATEX produces a list of figures. It is very similar to \tableofcontents.

```
1543 \newcommand*\listoffigures{%
         1544 (*rapport | boek)
                  \if@twocolumn
         1545
                    \@restonecoltrue\onecolumn
         1546
         1547
                  \else
         1548
                    \@restonecolfalse
         1549
                  \fi
         1550
                  \chapter*{\listfigurename}%
         1551 (/rapport | boek)
         1552 \langle artikel \rangle
                         \section*{\listfigurename}%
         1553
                  \@mkboth{\MakeUppercase{\listfigurename}}%
         1554
                          {\tt \{\MakeUppercase\{\listfigurename\}\}\%}
         1555
                  \@starttoc{lof}%
         1556 (rapport | boek)
                               \if @restonecol \two column \fi
         1557
\logitime This macro produces an entry in the list of figures.
         1558 \if@oldtoc
               1561
              \newcommand*\l@figure{\@regtocline{1}}
         1562 \fi
```

#### 9.1.3 List of tables

\listoftables This macro is used to request that LATEX produces a list of tables. It is very similar to \tableofcontents.

```
1563 \newcommand*\listoftables{%
1564 (*rapport | boek)
        \if@twocolumn
1566
           \@restonecoltrue\onecolumn
1567
        \else
1568
           \@restonecolfalse
1569
        \fi
        \chapter*{\listtablename}%
1570
1571 (/rapport | boek)
1572 (artikel)
               \section*{\listtablename}%
        \@mkboth{\MakeUppercase{\listtablename}}%
1573
                 {\MakeUppercase{\listtablename}}%
1574
        \@starttoc{lot}%
1576 (rapport | boek)
                       \if@restonecol\twocolumn\fi
1577
        }
```

\lambdale This macro produces an entry in the list of tables.

 $1578 \left| \text{dtable} \right|$ 

# 9.2 Bibliography

\biblindent The "open" bibliography format uses an indentation of \biblindent.

```
1579 \newdimen\bibindent
1580 \setlength\bibindent{1.5em}
```

\newblock This is a dummy definition for this macro which is used in the thebibliography environment.

```
1581 \newcommand*\newblock{}
```

thebibliography

The 'thebibliography' environment executes the following commands:

 $\label{lem:command} $$\operatorname{\ensuremath{\color{lem} - 11em \closed" colored, where the blocks (major units of information) of an entry run together.}$$ 

\sloppy - Used because it's rather hard to do line breaks in bibliographies, \sfcode'\.=1000\relax - Causes a '.' (period) not to produce an end-of-sentence space.

The implementation of this environment is based on the generic list environment. It uses the *enumiv* counter internally to generate the labels of the list.

When an empty 'thebibliography' environment is found, a warning is issued.

```
1582 \newenvironment{thebibliography}[1]
          1583 \langle *artikel \rangle
                    {\section*{\refname}%
          1584
                      \verb|\Cmkboth{\MakeUppercase\refname}|{\MakeUppercase\refname}||
          1585
          1586 (/artikel)
          1587 (*!artikel)
                    {\chapter*{\bibname}%
          1589
                      \@mkboth{\MakeUppercase\bibname}{\MakeUppercase\bibname}%
          1590 (/!artikel)
          1591
                    \list{\@biblabel{\@arabic\c@enumiv}}%
          1592
                          {\settowidth\labelwidth{\@biblabel{#1}}%
          1593
                           \leftmargin\labelwidth
                           \advance\leftmargin\labelsep
          1594
                           \@openbib@code
          1595
          1596
                           \usecounter{enumiv}%
          1597
                           \let\p@enumiv\@empty
                           \renewcommand*\theenumiv{\@arabic\c@enumiv}}%
          1598
                     \sloppy\clubpenalty4000\widowpenalty4000%
          1599
          1600
                     \sfcode'\.\@m}
          1601
                    {\def\@noitemerr
                      {\@latex@warning{Empty 'thebibliography' environment}}%
          1602
                     \endlist}
          1603
\newblock The default definition for \newblock is to produce a small space.
          1604 % \changes{v2.0t}{1996/04/01}{use \cs{renewcommand}} instead of
          1605 %
                    \cs{newcommand}}
          1606 \renewcommand\newblock{\hskip.11em\@plus.33em\@minus.07em}
```

\@openbib@code The default definition for \@openbib@code is to do nothing. It will be changed by the openbib option.

1607 \let\@openbib@code\@empty

\Obiblabel The label for a \bibitem[...] command is produced by this macro. The default from latex.dtx is used.

```
1608 % \renewcommand*\@biblabel[1]{[#1]\hfill}
```

\cite The output of the \cite command is produced by this macro. The default from latex.dtx is used.

1609 % \renewcommand\*\@cite[1]{[#1]}

#### 9.3 The index

theindex

The environment 'theindex' can be used for indices. It makes an index with two columns, with each entry a seperate paragraph. At the user level the commands \item, \subitem and \subsubitem are used to produce index entries of various levels. When a new letter of the alphabet is encountered an amount of \indexspace white space can be added.

```
1610 \newenvironment{theindex}{%
      \if@twocolumn
1611
1612
        \@restonecolfalse
1613
      \else
1614
        \@restonecoltrue
      \fi
1615
1616 (artikel)
             \twocolumn[\section*{\indexname}]%
1617 (!artikel)
             \twocolumn[\@makeschapterhead{\indexname}]%
      \@mkboth{\MakeUppercase{\indexname}}{\MakeUppercase{\indexname}}%
      \thispagestyle{plain}\parindent\z@
```

Parameter changes to \columnseprule and \columnsep have to be done after \twocolumn has acted. Otherwise they can affect the last page before the index.

```
1620 \columnseprule \z@
1621 \columnsep 35\p@
1622 \parskip\z@ \@plus .3\p@\relax
1623 \let\item\@idxitem
1624 \f%
```

When the document continues after the index and it was a one column document we have to switch back to one column after the index.

```
1625 \if@restonecol\onecolumn\else\clearpage\fi}
```

```
\@idxitem Thsee macros are used to format the entries in the index.
```

```
\label{lem:command*} $$ \left(\frac{1626 \mmand*}\didxitem {\pi_{626} \mmand*}\didxitem {\pi_{626} \mmand*}\didxitem } \right) $$ 1628 \mmand*\subsubitem{\pi_{0idxitem}\hspace*{30p0}} $$
```

\indexspace The amount of white space that is inserted between 'letter blocks' in the index.

1629 \newcommand\*\indexspace{\par\vskip10\p@\@plus5\p@\@minus3\p@\relax}

#### 9.4 Footnotes

\footnoterule

Usually, footnotes are separated from the main body of the text by a small rule. This rule is drawn by the macro \footnoterule. The standard LaTeX document classes make sure that the rule takes no vertical space (see plain.tex) and compensate for the natural height of the rule of 0.4pt by adding the right amount of vertical skip. For the artikel2 document class this is still true, but for the others the amount of whitespace between the last line of the text and the start of the footnotes is increased by giving \footnoterule a positive height<sup>1</sup>.

<sup>&</sup>lt;sup>1</sup>This should perhaps have been done by increasing the value of \skip\footins, but changing that now would mean changing the formatting of existing documents. (JLB, 08/09/1997)

To prevent the rule from colliding with the footnote we first add a little negative vertical skip, then we put the rule and add some positive vertical skip.

```
1630 \renewcommand*\footnoterule{%
      \mbox{kern-3}p0
1631
1632 (*type1 | type3)
      \kern.5\baselineskip
1633
      \hrule\@width\unitindent
1634
1635
      \kern.4\baselineskip
1636 (/type1 | type3)
1637 (*type2)
      \hrule\@width 3\unitindent
1639
      \kern 2.6\p@
1640 (/type2)
1641 }
```

\c@footnote Footnotes are numbered within chapters in the rapport and book document styles.

```
1642 % \newcounter{footnote}
1643 \(\lambda\) \(\lambd
```

\@makefntext

The footnote mechanism of LATEX calls the macro \@makefntext to produce the actual footnote. The macro gets the text of the footnote as its argument and should use \@thefnmark as the mark of the footnote. The macro \@makefntextis called when effectively inside a \parbox of width \columnwidth (i.e., with \hsize = \columnwidth).

An example of what can be achieved is given by the following piece of  $T_EX$  code.

```
\long\def\@xmakefntext#1#2{%
%<!type3> \parindent=.5\unitindent
%<type3> \parindent=\z@\parskip=.5\baselineskip
\def\labelitemi{--}\@revlabeltrue
{\setboxO=\hbox {#1\hskip.5em plus 1fil}%
\dimenO=2\wdO
\ifdim\dimenO>\unitindent
\global\unitindent=\dimenO
\@indentset
\fij}%
\@setpar{\@@par
\@tempdima \hsize
\advance\@tempdima-.5\unitindent
\parshape \@ne .5\unitindent \@tempdima}%
\par
\noindent\llap{\hb@xt@.5\unitindent{#1\hfil}}#2}
```

The effect of this definition is that all lines of the footnote are indented by 10pt, while the first line of a new paragraph is indented by 1em. To change these dimensions, just substitute the desired value for '10pt' (in both places) or '1em'. The mark is flushright against the footnote.

In these document classes we use a simpler macro, in which the footnote text is set like an ordinary text paragraph, with no indentation except on the first line of the footnote. Thus, all the macro must do is set \parindent to the appropriate value for succeeding paragraphs and put the proper indentation before the mark.

We change the label of itemized lists inside footnotes and need to check that the \unitindent is large enough for our purposes.

For most of the document classes produced from this file we need a slightly modified \@makefntext on the title page, so we introduce an extra macro, \@xmakefntext.

```
1644 (*type1 | type3)
1645 \newcommand*\@makefntext{\@xmakefntext{\normalfont\@thefnmark.}}
1646 \newcommand*\@xmakefntext[1]{%
1647
        \parindent\z@
        \def\labelitemi{\textendash}\@revlabeltrue
1648
        {\setbox0\hbox {#1\hskip.5em plus 1fil}
1649
         \dim 0=2\ \dimen0=2\\ wd0\\ relax
1650
1651
         \ifdim\dimen0>\unitindent
            \global\unitindent\dimen0\relax
1652
           \@indentset
1653
          \{fi\}
1654
        \leavevmode\hb@xt@.5\unitindent{#1\hfil}}
1655
1656 (/type1 | type3)
 For the artikel2 document class we have a simpler definition of \@makefntext.
1657 (*type2)
1658 \newcommand\@makefntext[1]{%
1659
        \parindent\othermargin
1660
        1661 (/type2)
```

\@makefnmark The footnote markers that are printed in the text to point to the footnotes should be produced by the macro \@makefnmark. We use the default definition for it.

1662 %\renewcommand\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}

#### 10 Initialization

#### 10.1 Words

\contentsname \listfigurename \listtablename This document class is for documents prepared in the English language. To prepare a version for another language, various English words must be replaced. All the English words that require replacement are defined below in command names.

```
1663 \newcommand*\contentsname{Contents}
                                                                        1664 \newcommand*\listfigurename{List of Figures}
                                                                        1665 \newcommand*\listtablename{List of Tables}
                          \refname
                          \verb|\bibname| 1666 | \langle artikel \rangle \\ | newcommand* \\ | refname \\ | References \}
                \indexname 1667 \(\rangle\rangle\rangle\newcommand*\bibname{Bibliography}\)
                                                                        1668 \newcommand*\indexname{Index}
           \figurename
               \verb|\table| 1669 \verb|\table| ame 1669 \verb|\table| ame | figure | figur
                                                                        1670 \newcommand*\tablename{Table}
                     \partname
     \verb|\chaptername|_{1671} \verb|\newcommand*| partname{Part}|
\appendixname
\abstractname
                                                                                                                                                                                                                                                                                      63
                           \seename
                           \andname
```

```
1672 \(\rangle\) \newcommand*\\chaptername{Chapter}\)
1673 \newcommand*\\appendixname{Appendix}\)
1674 \(\lambda\) \newcommand*\\abstractname{Abstract}\)
1675 \newcommand*\\seename{see}\)
1676 \newcommand*\\andname{and}\
```

# 10.2 Date

\today This macro uses the TEX primitives \month, \day and \year to provide the date of the IATEX-run.

```
1677 \newcommand*\today{}
```

To save space we define \today in a way that it is expanded when the class file is read in. This means that low-level changes to the internal TEX registers that are happening later on (e.g. if some packages goes \month=5) are not reflected in \today.

```
1678 \def\today{\ifcase\month\or
1679     January\or February\or March\or April\or May\or June\or
1680     July\or August\or September\or October\or November\or December\fi
1681    \space\number\day, \number\year}
```

### 10.3 Two column mode

\columnsep This gives the distance between two columns in two column mode.

```
1682 \setlength\columnsep{10\p0}
```

\columnseprule This gives the width of the rule between two columns in two column mode. We have no visible rule.

1683 \setlength\columnseprule{0\p@}

# 10.4 The page style

We have *plain* pages in the document classes artikel and rapport unless the user specified otherwise. In the boek document class we use the page style *headings* by default. We use arabic pagenumbers.

```
1684 (!boek)\pagestyle{plain}
1685 (boek)\pagestyle{headings}
1686 \pagenumbering{arabic} % Arabic page numbers
```

# 10.5 Single or double sided printing

When the twoside option wasn't specified, we don't try to make each page as long as all the others.

```
1687 (*artikel)
1688 \if@twoside
1689 \else
1690 \raggedbottom
1691 \fi
1692 (/artikel)
```

When the two column option was specified we call \two column to activate this mode. We try to make each column as long as the others, but call sloppy to make our life easier.

```
1693 \if@twocolumn
1694 \twocolumn
1695 \sloppy
1696 \flushbottom

Normally we call \onecolumn to initiate typesetting in one column.
1697 \else
1698 \onecolumn
1699 \fi
```

\frenchspacing Controls the amount of space after a punctuation mark.

```
\begin{array}{l} 1700 \; \texttt{\frenchspacing} \\ 1701 \; \big\langle / \mathsf{artikel} \; | \; \mathsf{rapport} \; | \; \mathsf{boek} \big\rangle \end{array}
```

# Index

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

Symbols	\@dotsep <u>1381</u>	\@indentset <u>188</u> ,
\@Roman 752	\@dottedtocline 1519,	194, 196, 684, 1653
\@afterheading	1526-1529,	\@itemdepth
. 820, 853, 902, 926	1532–1535, 1559	1131, 1134, 1135
\@afterindentfalse .	\@emptypagestyle	\@itemitem . 1135, 1136
	437, 440	\@itempenalty $\underline{1030}$
\@afterindenttrue .	\@endparpenalty $1030$	$\c \c \$
	\@endpart . 842, 861, 862	\@listI $102,  \underline{1033}$
$\c \c \$	\@endtheorem 1244	\@listdepth . 1111, 1138
$\c \c \$	\@enumctr 1108-1110	\@listi $102,  \underline{1033}$
\@author $525, 556, 558,$	\@enumdepth	\@listii $\dots \dots \underline{1046}$
576, 628, 648, 660	1104, 1107, 1108	\@listiii $\dots 1046$
\@beginparpenalty $1030$	\@eqnnum <u>1306</u>	\@listiv $\dots \underline{1046}$
\@begintheorem $\underline{1244}$	\@evenfoot 436,	\@listv $\dots \underline{1046}$
\@biblabel	449, 451, 456, 512	\@listvi $\dots \dots \underline{1046}$
1591, 1592, <u>1608</u>	\@evenhead	\@lowpenalty
\@chapapp . $478, 505,$	. 436, 446, 457, 513	$\dots \ \underline{214}, \ 1030-1032$
<u>762</u> , 884, 913, 1282	\@fnsymbol 539, 599	\@mainaux 192, 195
\@chapter $879, 880$	\@fontswitch 1372, 1373	\@mainmatterfalse .
\@cite $\dots \dots \underline{1609}$	\@fpbot 405	
\@currentpagestyle .	· ·	\@mainmattertrue 9,770
438, 440	\@fpsep <u>405</u>	\@makecaption $\underline{1345}$
\@date 526,	\@fptop <u>405</u>	\@makechapterhead .
527, 564, 566,	\@hangfrom 695, 698, 728	$\dots$ 899, 901, <u>905</u>
578, 630, 651, 661	\@highpenalty	\Qmakefnmark . $600, \underline{1662}$
\@dblfloat . 1324, 1343	214, 1456, 1402	\@makefntext
\@dblfpbot <u>420</u>	1475, 1483, 1493	536, 602, 605, <u>1644</u>
$\d$ dblfpsep $\underline{420}$	\@idxitem 1623, <u>1626</u>	\@makeschapterhead .
\@dblfptop $\dots \underline{420}$	\@ifundefined 193	$923, 925, \underline{928}, 1617$

\ 0 1	110 100 104	
\@maketitle 612,	119, 128, 134,	
614, 619, 626, <u>636</u>	140, 148–154,	$\searrow$ 478,
\@medpenalty $\dots$ $\underline{214}$	157-163,  166-171	484, 505, 1247, 1251
$\mbox{Qminipagefalse}$ $1355$	$\c$ 0settopoint $267$ ,	Α.
\@minipagerestore $\underline{1290}$	339, 340, 345, 357	<b>A</b>
$\mbox{Qmparswitchfalse}$ . $41$	\@spart 783, 796, <u>844</u>	\abovecaptionskip .
$\mbox{\colored}$ 0mparswitchtrue $42$	$\c$ 0specialpagetrue . $442$	<u>1345</u> , 1350
\@mpfootins <u>1296</u>	\@specialstyle 443	\abovedisplayshortskip
\@nameuse 438	\@ssect	86,
\@needwriteindenttrue	\@startsection	92, 98, 109, 115,
	. 942, 946, 955,	121, 130, 136, 142
\@nobreakfalse	959, 968, 972,	\abovedisplayskip $85$ ,
1409, 1467	982, 983, 990, 991	91, 97, 101, 108,
\@nobreaktrue 1466		114, 120, 124,
\@noitemerr 1601	\@starttoc 1398,	129, 135, 141, 145
\@normalsize 81	<u>1401</u> , 1555, 1575	abstract (environ-
<del></del> -	\@svsec 674,	ment) $1188$
\@oddfoot . <u>436</u> , 447,	688, 695, 699, 711	\abstractname
451, 456, 489, 512	\@svsechd 710, 731	1192, 1199,
\Qoddhead $\underline{436}$ ,	$\verb  Qtempa 584,$	1204, 1208, <u>1671</u>
446, 458, 490, 514	586, 588, 592, 836	\addcontentsline
\@oldtocfalse 11	\@tempskipa	703, 712,
\@oldtoctrue 51	. 690, 691, 724, 725	803, 805, 826,
\@opargbegintheorem	\@textsuperscript .	828, 885, 889, 893
1244	538,	\addtocontents 896, 897
\@openbib@code	601, 603, 608, 1662	\and 556,
$\dots$ 61, 1595, <u>1607</u>	\@thanks	582, 585, 634, 657
\@openrightfalse 48	. 569, 575, 621, 627	\andname $590, 1671$
$\c$ 0openrighttrue 47	\@thefnmark 538,	\appendix $\underline{1272}$
\@part 783, 796, <u>798</u>	601, 603, 608,	
\@pnumwidth $1381$ ,		\appendixname $1282, \underline{1671}$
1460, 1461,	1645, 1660, 1662	\arraycolsep $\dots$ $1285$
_	1645, 1660, 1662 \@title 524, 547, 549,	$\label{eq:arraycolsep} $$\operatorname{arraycolsep} \dots \ \underline{1285}$ $$\operatorname{arrayrulewidth} \dots \ \underline{1287}$$
1460, 1461,	1645, 1660, 1662 \Ctitle 524, 547, 549, 577, 629, 643, 655	$\begin{tabular}{ll} $\tt \arraycolsep &$
1460, 1461, 1463, 1487,	1645, 1660, 1662 \@title 524, 547, 549, 577, 629, 643, 655 \@titlecenteredfalse 14	$\begin{tabular}{ll} \verb \arraycolsep  & 1285 \\ \verb \arrayrulewidth  & 1287 \\ \verb \AtEndDocument  & 197 \\ \verb \AtEndOfPackage  & 60 \\ \end{tabular}$
1460, 1461, 1463, 1487, 1488, 1492,	1645, 1660, 1662 \@title 524, 547, 549, 577, 629, 643, 655 \@titlecenteredfalse 14 \@titlecenteredtrue 52	$\begin{tabular}{ll} $\tt \arraycolsep &$
1460, 1461, 1463, 1487, 1488, 1492, 1506, 1507, 1511	1645, 1660, 1662 \@title 524, 547, 549, 577, 629, 643, 655 \@titlecenteredfalse 14 \@titlecenteredtrue 52 \@titlepagefalse	$\begin{tabular}{ll} \verb \arraycolsep  & 1285 \\ \verb \arrayrulewidth  & 1287 \\ \verb \AtEndDocument  & 197 \\ \verb \AtEndOfPackage  & 60 \\ \end{tabular}$
1460, 1461, 1463, 1487, 1488, 1492, 1506, 1507, 1511 \@ptsize <u>1</u> , 38-40, 79	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{tabular}{ll} \verb \arraycolsep $
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