

The `pagesLTS` package*

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Abstract

This package puts the labels `LastPage` (`\AtEndDocument`) and `VeryLastPage` (`\AfterLastShipout`) into the `.aux` file, allowing the user to refer to the (very) last page of a document. This might be particularly useful in places like headers or footers. When more than one page numbering scheme is used, these references do not give the total *number* of pages. For this case the label `LastPages` is introduced. Additionally, at the last page of each page numbering scheme a label `pagesLTS.<numbering scheme>` is placed, where `<numbering scheme>` is e.g. `arabic`, `roman`, `Roman`, `alph`, or `Alph`. For `fnsymbol` please use `\lastpageref{pagesLTS.fnsymbol}` instead of `\pageref{pagesLTS.fnsymbol}`. When the same numbering scheme is used twice, the page numbers are either reset to one or continued automatically, depending on the option given when the package is called. The command `\theCurrentPage` prints the current total/absolute page number – in contrast to `\thepage`, which gives only the page *name* in the current page numbering scheme. `\theCurrentPageLocal` gives the current number of pages in the current page numbering scheme. `\thepage` and `\theCurrentPageLocal` are different e.g. when `\addtocounter{page}{...}` or `\setcounter{page}{...}` were used. At the first page of the document a label `pagesLTS.0` is created. This label can be referred to, too. Further labels are provided for special cases.

The `alphalph` package is supported, i.e. page numbers `alph` or `Alph` > 26 and `fnyambol` > 9 can be used (with according options set). Even zero and negative page numbers can be used with `arabic`, `alph`, `Alph`, `roman`, `Roman`, and `fnsymbol` page numbering (with `alphalph` package and according options).

Right after `\begin{document}` a `\pagenumbering{...}` should be called – with the appropriate argument out of e.g.
`arabic` (Arabic numerals: 1, 2, 3, 4,...),
`roman` (Lowercase Roman numerals: i, ii, iii, iv,...), `Roman` (Uppercase Roman numerals: I, II, III, IV,...),
`alph` (Lowercase letters: a, b, c, d,...), `Alph` (Uppercase letters: A, B, C, D,...),
`fnsymbol` (Footnote symbols: *, †, ‡, §,...).

This package first started as a revision of the `lastpage` package of **Jeffrey P. Goldberg** (Thanks!), but then it became obvious that a replacement was needed.

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Save per page about 200 ml water, 2 g CO₂ and 2 g wood: Therefore please print only if this is really necessary.

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1 Introduction

This package puts the labels `LastPage` (`\AtEndDocument`) (like the `LastPage` package of Jeffrey P. Goldberg) and `VeryLastPage` (`\AfterLastShipout`) into the `.aux` file, allowing the user to refer to the (very) last page of a document via `\lastpageref{LastPage}` and `\lastpageref{VeryLastPage}`. This might be particularly useful in places like headers or footers. When more than one page numbering scheme is used, these references do not give the total *number* of pages. For this case the label `LastPages` is introduced (similar to label `TotPages` of the `TotPages` package, but set later in the document). Additionally, at the last page of each page numbering scheme a label `pagesLTS.<numbering scheme>` is placed, where `<numbering scheme>` is e.g. `arabic`, `roman`, `Roman`, `alph`, or `Alph`. For `fnsymbol` please use `\lastpageref{pagesLTS.fnsymbol}` instead of `\pageref{pagesLTS.fnsymbol}`. When the same numbering scheme is used twice, the page numbers are either reset to one or continued automatically, depending on the option given when the package is called. The command `\theCurrentPage` prints the current total/absolute page number - in contrast to `\thepage`, which gives only the page *name* in the current page numbering scheme. `\theCurrentPageLocal` gives the current number of pages in the current page numbering scheme. `\thepage` and `\theCurrentPageLocal` are different e.g. when `\addtocounter{page}{...}` or `\setcounter{page}{...}` were used. (See also L^AT_EX bug 3421: 3rd page is even (twoside, titlepage, abstract), <http://www.latex-project.org/cgi-bin/ltxbugs2html?category=LaTeX&responsible=anyone&state=anything&keyword=pagenumber&pr=latex%2F3421&search=>.) At the first page of the document a label `pagesLTS.0` is created. This label can be referred to, too. Further labels are provided for special cases. The `alphalph` package is supported, i.e. page numbers `alph` or `Alph` > 26 and `fnyambol` > 9 can be used (with the according options set). Even zero or negative page numbers can be used with `arabic`, `alph`, `Alph`, and `fnsymbol` page numbering (with `alphalph` package and according options), and zero `roman` and `Roman` pages, too.

Right after `\begin{document}` a `\pagenumbering{...}` should be called – with the appropriate argument out of e.g. `arabic` (Arabic numerals: 1, 2, 3, 4,...), `roman` (Lowercase Roman numerals: i, ii, iii, iv,...), `Roman` (Uppercase Roman numerals: I, II, III, IV,...), `alph` (Lowercase letters: a, b, c, d,...), `Alph` (Uppercase letters: A, B, C, D,...), `fnsymbol` (Footnote symbols: *, †, ‡, §,...).

This package first started as a revision of the `lastpage` package of **Jeffrey P. Goldberg** (Thanks!), but then it became obvious that a replacement was needed.

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logical page numbers

Tip: For the display of the pdf file use **logical page numbers** together with `hyperref`!

- In Adobe Reader 9.3.3 enable:
Edit > Preferences (Ctrl+k) > Page Display > Page Content and Information > Use logical page numbers .
- Use the `hyperref` package with option `plainpages=false` .

The display will be e.g. “7 (7 of 9)”, or, in case of Roman instead of arabic numbers, “VII (7 of 9)”, and when different page numbers are used (see below) e.g. arabic after 10 Roman pages: “17 (27 of 30)”. Please try this with the compiled `pagesLTS-example` file!

The name of the `pagesLTS` package refers to Last, Total, and page numbering Schemes pages.

2 Usage

Just load the package placing

```
\usepackage[<options>]{pagesLTS}
```

in the preamble of your $\text{\LaTeX} 2_{\epsilon}$ source file (about `\AtEndDocument` see subsection 3.1) and place a `\pagenumbering{...}` with appropriate argument (e.g. arabic, roman, Roman, fnsymbol, alph, or Alph) right behind `\begin{document}` (see subsection 2.3.1)!

For example for various draft forms it is desirable to have a page reference to the last page, so that e.g. page footers can contain something like “page N of K ”, where N is the current page and K is the last page. Once the package is loaded, anywhere in the text references can be made to the labels `LastPage`, `VeryLastPage`, and `LastPages` (most times with `\pageref{...}`, but more save with `\lastpageref{...}`). In particular one can use the `fancyhdr` or `nccfancyhdr` package, or redefinitions of the page headings and footings to get a reference to the (very) last page.

2.1 Options

options The `pagesLTS` package takes the following options:

2.1.1 pagecontinue

pagecontinue When option `pagecontinue=false` is **not** given (i.e. `pagecontinue` or `pagecontinue=true` or no `pagecontinue` option at all), at each `\pagenumbering{...}` command the number of the page numbering will be continued with the page number following the last page of the same page numbering scheme. For example, if there are V Roman pages in the frontmatter, some arabic ones in the mainmatter, and then Roman ones again in the backmatter, the last ones will start with VI instead of I again.

If you want to start with I (or i, 1, a, A, *,...) again, set option `pagecontinue=false`. If you want to generally continue the numbers, but for some page numbering scheme do not want this, use `pagecontinue=true` and say `\setcounter{page}{1}` after `\pagenumbering{...}` for that page numbering scheme.

2.1.2 alphMult, AlphMulti, fnsymbolmult

The page number printed in `fnsymbol`¹ must be > 0 and < 10 and those printed in `alph`² and `Alph`³ must be > 0 and < 27 . After page Z \LaTeX *should* continue with AA, AB, AC,... Some people prefer AA, BB, CC,..., but in hexadecimal it is $AA_{16} = 170_{10}$ and $171_{10} = AB_{16}$, whereas $BB_{16} = 187_{10}$. In any way it should continue at all (maybe even with an user option to choose between the two continuations), but instead only gives an error:

```
LaTeX Error: Counter too large
See the LaTeX manual or LaTeX Companion for explanation.
You've lost some text. Try typing <return> to proceed.
If that doesn't work, type X <return> to quit.
```

¹ *, †, ‡, §, ¶, ||, **, ††, ‡‡

² a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z

³ A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z

But thanks to the `alphalph` package by Heiko Oberdiek these limitation no longer hold. With his `\erroralph` command now even negative or zero page “numbers” are possible.

alphMult The string option `alphMult` takes three values: `ab`, `bb`, `0`:

ab After page `z`, the page “numbers” continue with `aa`, `ab`, `ac`, `ad`,..., `fxshrxw` (the default), and before `a` with `0`, `-a`, `-b`,..., `-z`, `-aa`, `-ab`,..., `-fxshrxw` ($= -2147483647$).

bb After page `z`, the page “numbers” continue with `aa`, `bb`, `cc`, `dd`,..., and before `a` with `0`, `-a`, `-b`,..., `-z`, `-aa`, `-bb`,...
(Internally up to $\pm 55\,834\,558$ is allowed, but when printed will exceed the \LaTeX capacity even for smaller numbers – in the example file this happens at about 6 500.)
(If you have a document with more than 6 500 pages, you might think about splitting it in volumes. And page “numbers” with about 100 digits are probably not easy to grasp for the reader, too.)

0 (zero) The `pagesLTS` package does nothing, thus the user is free to define the page “numbers” after `z` and before `a`.
(But if the user does not do anything at all, the
LaTeX Error: Counter too large
will appear again.)

AlphMulti The string option `AlphMulti` takes three values: `AB`, `BB`, `0`:

AB After page `Z`, the page “numbers” continue with `AA`, `AB`, `AC`, `AD`,..., `FXSHRXW` (the default), and before `A` with `0`, `-A`, `-B`,..., `-Z`, `-AA`, `-AB`,..., `-FXSHRXW`.

BB After page `Z`, the page “numbers” continue with `AA`, `BB`, `CC`, `DD`,..., and before `A` with `0`, `-A`, `-B`,..., `-Z`, `-AA`, `-BB`,...
(About the limits please see `alphMult` above.)

0 (zero) The `pagesLTS` package does nothing, thus the user is free to define the page “numbers” after `Z` and before `A`.
(But if the user does not do anything at all, the
LaTeX Error: Counter too large
will appear again.)

fnsymbolmult When option `fnsymbolmult=false` is **not** given (i.e. `fnsymbolmult` or `fnsymbolmult=true` or no `fnsymbolmult` option at all), after 5 (¶) the page “number” is continued with the doubled “number” of the first, second, third,... page (`*`, `††`, `‡‡`, `§§`, `¶¶`), and after the tenth page the “number” is tripled (`***`, `†††`,...). Compile the `pagesLTS-example.tex` with `pdf\LaTeX` and see the resulting pdf file.
Before `*` (page 1) the page “numbers” are continued with `0`, `-*`, `-†`,..., `-¶`, `-***`, `-†††`,...
If this is not wanted, set option `fnsymbolmult=false`, and `pageLTS` will do nothing and allow the user to change the page “number”.
(But if the user does not do anything at all, the
LaTeX Error: Counter too large
will appear again.)

While in $\text{\LaTeX}_{2\epsilon}$ arabic (page) numbers are possible up to $\text{MAX} = 2\,147\,483\,647$ (cf. the `alphalph` package), `\erroralphalph{\fnsymbolmult}{...}` numbers are possible up to 10 737 415 only. If this number is not only used internally but printed, after number about 11 705 (which is 2341 times ¶) the $\text{\LaTeX}_{2\epsilon}$ capacity is exceeded, depending on the remaining file and its use of \TeX capacity, of course. (If you have a document with more than 11 705 pages, you might think about splitting it in volumes. And page “numbers” with 2341 digits are probably not easy to grasp for the reader, too.)

2.1.3 romanMult, RomanMulti

`romanMult` The options `romanMult(=true)` and `RomanMulti(=true)` expand the `\roman` and `\Roman` page numbering scheme to values below one
`RomanMulti` (< 1), i.e. 0, -i, -ii, -iii, -iv, ... and 0, -I, -II, -III, -IV, ..., respectively.
Again the $\mathrm{T}_{\mathrm{E}}\mathrm{X}$ capacity will be exceeded before $\pm \mathrm{MAX} = \pm 2\,147\,483\,647$, and even if 1 000 000 000 is internally possible, this would print 1 000 000 times the letter m, which would require either very small print or quite huge paper size.
(If you have a document with so many pages, you might think about splitting it in volumes. And page “numbers” with thousands of digits are probably not easy to grasp for the reader, too.)
If the expansion below 1 is not wanted, set options `romanMult=false` and/or `RomanMulti=false`, and `pageLTS` will do nothing and allow the user to change the page “number”. (But if the user does not do anything at all, $\mathrm{L}^{\mathrm{A}}\mathrm{T}_{\mathrm{E}}\mathrm{X}$ will just ignore the values - not even a warning is given.)

2.1.4 Arabic page numbers

`Arabic page numbers` In $\mathrm{L}^{\mathrm{A}}\mathrm{T}_{\mathrm{E}}\mathrm{X}_{2\epsilon}$ arabic (page) numbers are already possible between $-\mathrm{MAX} \dots \mathrm{MAX}$, where $\mathrm{MAX} = 2\,147\,483\,647$ (cf. the `alphalph` package), without any expansion necessary. (But if you have a document with so many pages, you might think about splitting it in volumes!)

2.2 Labels

`pagesLTS.0` At the first page a label `pagesLTS.0` is created. If `\pagenumbering{...}` is used right after `\begin{document}`, this is much easier for the `pagesLTS` package (and chances for successful placing of all labels are much higher; cf. subsection 2.3.2).

`LastPage` `\AtEndDocument` (see subsection 3.1) this package defines a label, `LastPage`, which the user can refer to with the `\lastpageref{LastPage}` command. While `\pageref{LastPage}` is also possible (especially for backward compatibility with the `LastPage` package), this is discouraged, because it will not work when it is used together with the `hyperref` package and the `fnsymbol` page numbering scheme. (The `LastPage` package did not work with this combination, too, so if you want to, you can reproduce the old error – but you do not have to do it, but can use `\lastpageref{LastPage}`.)

`VeryLastPage` `\AfterLastShipout` the label `VeryLastPage` is defined, which the user can also refer to with the `\lastpageref{VeryLastPage}` command. Depending on usage of `\AtEndDocument` by other packages, `LastPage` might not point to the very last page, but `\lastpageref{VeryLastPage}` should do this (cf. subsection 3.1).

`LastPages` When more than one page numbering scheme is used, neither `LastPage` nor `VeryLastPage` give the total **number** of pages. For
`page number` example, for a document with VI+36 pages, both give “36” as reference to the last page. While this is correct, the total number of pages
`number of pages` is 42, and this is given by the reference to `LastPages`: `\lastpageref{LastPages}` (note the “s” at the end). When the page number was manipulated by `\addtocounter{page}{...}` or `\setcounter{page}{...}`, `LastPages` ignores this. (At a page numbering change the page is reset to one (without option `pagecontinue`). This is done by `\setcounter{page}{1}`, thus this is ignored, too.)
`\pageref{totpages}` of the `totpages` package is similar to `\lastpageref{LastPages}`, but while the target for `\pageref{totpages}` is placed `\AtEndDocument`, the target for `\lastpageref{LastPages}` is placed `\AfterLastShipout`, therefore `\lastpageref{LastPages}` is safer to really get the total page number.

<code>\theCurrentPage</code>	<code>\theCurrentPage</code> gives the current total/absolute page, in contrast to <code>\thepage</code> , which gives only the page <i>name</i> in the current page numbering scheme. For example, when there are Roman VII pages in the frontmatter and afterwards in the mainmatter you are at arabic page 9, then <code>\theCurrentPage</code> is 16, whereas <code>\thepage</code> is 9. When the page “number” (name) is manipulated by <code>\addtocounter{page}{...}</code> or <code>\setcounter{page}{...}</code> , <code>\theCurrentPage</code> ignores this. Because <code>CurrentPage</code> is a normal counter, you can also say e.g. <code>\Roman{CurrentPage}</code> to get the value in Roman page numbering scheme (e.g. VIII for 8).
<code>\theCurrentPageLocal</code>	<code>\theCurrentPageLocal</code> gives the current (arabic) number of pages in the current page numbering scheme. <code>\thepage</code> and <code>\theCurrentPageLocal</code> are different e.g. when <code>\addtocounter{page}{...}</code> or <code>\setcounter{page}{...}</code> were used. <code>\theCurrentPageLocal</code> can be printed in other formats, e.g. <code>\roman{pagesLTS.current.local.roman}</code> , but probably it only makes sense if page numbering scheme and format are the same, e.g. <code>\Roman{pagesLTS.current.local.Roman}</code> or <code>\Alph{pagesLTS.current.local.Alph}</code> . <code>\arabic{pagesLTS.current.local....}</code> probably make sense even when combined with another page numbering scheme. And this is exactly what <code>\theCurrentPageLocal</code> does: <code>\def\theCurrentPageLocal{\arabic{pagesLTS.current.local.\pagesLTS@pnc}}.</code>
<code>pagesLTS. page numbering scheme . number</code>	If you want to refer to the last page of the first, second,... use of a page numbering scheme, you can refer to <code>pagesLTS.<page numbering scheme>.<number></code> , e.g. <code>\lastpageref{pagesLTS.Roman.1}</code> , where <code><number></code> is the occurrence of the page numbering scheme. For details please see page 10.
<code>\lastpageref</code>	For pages with the <code>fnsymbol</code> page numbering scheme, <code>\lastpageref{...}</code> instead of <code>\pageref{...}</code> <i>must</i> be used. This is required for pages somewhere inside of the document as well as the (very) last page(s). Because <code>\lastpageref{...}</code> is a synonym for <code>\pageref{...}</code> , where no <code>fnsymbol</code> page numbering scheme is used, it is save(r) to use it for all references to labels provided by the <code>pagesLTS</code> package.
<code>\pagenumbering</code>	<h2>2.3 \pagenumbering{...}</h2> <h3>2.3.1 If \pagenumbering{...} is not used</h3> <p>When the <code>pagesLTS</code> package is used, but <code>\pagenumbering{...}</code> (with an argument like arabic, roman, Roman, fnsymbol, alph, or Alph) is not used, there should be no problem, except that you might need more (!) compiler runs to get all references right, and some references might even be missing (see below). The <code>pagesLTS</code> package tries to determine the page numbering scheme at the first shipout, but success is not guaranteed. Thus please use <code>\pagenumbering{...}</code> at the beginning of your document!</p> <p>Without <code>\pagenumbering{<something>}</code> (<code><something></code> e.g. = arabic) at the beginning of the document, the page numbers might be given in arabic <i>by (class) default</i>, but the <code>pagesLTS</code> package does not know about this without <code>\pagenumbering{arabic}</code>. –</p> <p>The label <code>pagesLTS.0</code> is created at the first page even if no <code>\pagenumbering{...}</code> command is given. Maybe have a look at the <code>.aux</code> file after compiling your document to detect further labels (of other packages, too).</p>

2.3.2 If `\pagenumbering{...}` is used once

`pagesLTS.0` At the first page a label `pagesLTS.0` is created. If `\pagenumbering{...}` is used right after `\begin{document}`, this is much easier for the `pagesLTS` package (and chances for successful placing of all labels are much higher).

2.3.3 If `\pagenumbering{...}` is used more than once

Everything from the preceding subsections applies and additionally the following:

When different page numbering schemes are used, e. g. Roman numbers for the frontmatter and arabic numbers for the mainmatter, please use `\pagenumbering{...}` for each of them! Even if you do this, the reference to neither the label `LastPage` nor the label `VeryLastPage` gives the **total** number of pages, but only the number of pages of the last used page numbering scheme (which could be exactly what you want, e. g. if you want to refer to the last page itself and do not want to give the total number of pages).

`LastPages` For remediation the label `LastPages` (with “s” at its end) is introduced. Please then refer to this label by `\lastpageref{LastPages}` instead of `LastPage` or `VeryLastPage`.

`pagesLTS.arabic` Additionally, at the last page of each page numbering scheme a label `pagesLTS.<numbering scheme>` is placed, where `<numbering scheme>` is e. g. arabic, roman, Roman, alph, Alph,....
`pagesLTS.roman`
`pagesLTS.Roman` For the `fnsymbol` page numbering scheme `\lastpageref{pagesLTS.fnsymbol}` is needed instead of `\pageref{pagesLTS.fnsymbol}`.
`pagesLTS.alph` You can and should use `\lastpageref{...}` also for the other page numbering schemes.
`pagesLTS.Alph`
`pagesLTS.fnsymbol`

While at the time of the last revision of the `pagesLTS` package no other page numbering schemes were known to the maintainer, this package in principle works with every scheme which is recognized by the original `\pagenumbering` command. But the `hyperref` package only then works with crazy page names, if the references to those pages are given in a certain way, thus the combination of a new page numbering scheme, the `hyperref` and the `pagesLTS` package might not work. – The `pagesLTS` package by itself also works with schemes, which the original `\pagenumbering{...}` does not recognize, but because the original `\pagenumbering{...}` is called by the `pagesLTS` package, this might cause an error, see subsection 3.4! (And if the number format is unknown to `LATEX`, the pages will have no number, and therefore cannot be referenced. You might be able to help yourself by using the `hyperref` package and manually placing `\hypertargets` and `\hrefs`.)

2.3.4 If the same `\pagenumbering{...}` scheme is used more than once

Everything from the preceding subsections applies and additionally the following:

`pagecontinue` If the same page numbering scheme is used twice (or even more often) in one document (e. g. in the frontmatter Roman: I–V, in the mainmatter arabic: 1–20, and in the backmatter again Roman: VI–X), the second time it is used, the page numbering is either continued (option `pagecontinue` or `pagecontinue=true` or no option `pagecontinue`; the default) or reset to one (option `pagecontinue=false`). It is even possible to use a page numbering scheme more than twice.

pagesLTS. page numbering
scheme . number

If you want to refer to the last page of the first, second,... use of a page numbering scheme, page V in the example above, you can refer to `pagesLTS.<page numbering scheme>.<number>`, e.g. `\lastpageref{pagesLTS.Roman.1}`, where `<number>` is the occurrence of the page numbering scheme.

If you want to refer to the first page of a page numbering scheme, just place a label there, e.g.

```
\pagenumbering{Roman}
\section{Section title\label{RomanSection}}
```

(You know where you use `\pagenumbering{...}` and this is the `pagesLTS` package, not the `firstpage` one).

When you want to give the number of pages of each “sector” of the page numbering scheme, you can use

pagesLTS. page numbering
scheme . number
.local.cnt

`\lastpages{<page numbering scheme>}{<number>}`,
where `<page numbering scheme>` is e.g. `Roman`, `arabic`,... and `<number>` the “sector” number, e.g. `\lastpages{Roman}{2}`.
(Internally, the counter has the format `pagesLTS.<page numbering scheme>.<number>.local.cnt`.)
If you used the page numbering scheme `Roman` for three times, you could say

```
Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}\\
There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
\lastpages{Roman}{1}~pages in the first Roman sector
(\pageref{Roman} -- \lastpageref{pagesLTS.Roman.1}),\\
\lastpages{Roman}{2}~pages in the second Roman sector
(\pageref{Roman2} -- \lastpageref{pagesLTS.Roman.2}), and\\
\lastpages{Roman}{3}~pages in the third Roman sector
(\pageref{Roman3} -- \lastpageref{pagesLTS.Roman.3}).\\
```

to get

```
Last Roman page (pagesLTS.Roman): VIII
There are 8 pages with Roman numbers:
3 pages in the first Roman sector (I – III),
4 pages in the second Roman sector (IV – VII), and
3 pages in the third Roman sector (VIII – X).
```

(see e.g. the compiled `pagesLTS-example` file).

If you want to continue one page numbering scheme, but later on (third use of it, or for another page numbering scheme) want to reset the page number, just say `\setcounter{page}{1}` there.

In your document the code

```
\makeatletter
\renewcommand{\@evenfoot}%
{ \normalsize\slshape DRAFT \today\hfil \upshape page {\thepage} (\theCurrentPage) of\ %
  \lastpageref{pagesLTS.Roman} + \lastpageref{pagesLTS.arabic}\ = \lastpageref{LastPages} pages%
}
\renewcommand{\@oddfoot}{\@evenfoot}
\makeatother
```

creates footers like

“DRAFT August 25, 2010 page V (5) of VII + 35 = 42 pages”

or

“DRAFT August 25, 2010 page 10 (17) of VII + 35 = 42 pages”

in the compiled document (cf. the `pagesLTS-example` file).

Code like

```
This book has \lastpageref{pagesLTS.Roman}+\lastpageref{pagesLTS.arabic} pages (\lastpageref{LastPages} pages in total).
```

produces output like

This book has X+85 pages (95 pages in total).

(when using the `hyperref` package, the references are even hyperlinked).

If `\addtocounter{page}{...}` or `\setcounter{page}{...}` have been used, the local version of `CurrentPage` can be used, `\theCurrentPageLocal`, see subsection [2.2](#).

2.4 `papermas(s)` package

There is a kind of an add-on to this package, the `papermas` package, which can be used to compute the number of sheets of paper needed to print a document (you can print more than one page of a document on one sheet of paper) as well as the approximate mass of the printout. Please see the [7.1](#) subsection.

3 A few warnings

3.1 `\AtEndDocument`

The output of a $\text{\LaTeX} 2_{\epsilon}$ run is not independent of the order in which packages are loaded. It is often the case that the same formats for which one must put tables and figure at the end, are the ones in which endnotes are also required. If one wants to use `\AtEndDocument` here as well (as done for `\lastpageref{LastPage}`), then it is easy to get to three separate uses of `\AtEndDocument` (assuming one uses this for the endnotes as well). Clearly it is not safe for any package writer or user to assume that no material will follow what they put into `\AtEndDocument`. Therefore a message, which begins with AED, is included in every usage of `\AtEndDocument`, and it is tried to minimize any side effects the usage may have.

As now Heiko Oberdiek’s `atveryend` package is used, the references `\lastpageref{VeryLastPage}` and `\lastpageref{LastPages}` should work all right. About how to get the `atveryend` package, please see subsection 7.1.

3.2 Interaction with very old versions of the `endfloat` package

The very old version 2.0 (and earlier) of the `endfloat` package actually redefined the `\enddocument` command, and so interfered drastically with the $\text{\LaTeX} 2_{\epsilon}$ commands which make use of `\AtEndDocument`. Newer versions of `endfloat` exists (at the time of writing this documentation: v2.4i as of 1995/10/11) in modern documentation form, which should be available from the same source where you received this file, see subsection 7.1.

A note is placed in the style file at the `\RequirePackage` section, and later it is even checked whether a (very) old `endfloat` package is in use. If it is, a warning or even an error message is given, depending on `endfloat` version. This assumes, that the old versions of `endfloat` at least gave a version date, of course.

If you want your `LastPage` to label the last page of these end floats, you need to load `pagesLTS` after loading `endfloat`, or to use `VeryLastPage` instead. If, on the other hand, you *want* `LastPage` to refer to the (not so) last page, exclusive of the the floats at the end, then load in the reverse order. Independent from the order of `pagesLTS` and `endfloat`, you will still need the modified⁴ version of `endfloat`.

Using the `LastPages` (*s!*) label should get you to the last page in all cases: `\lastpageref{LastPages}`.

Other $\text{\LaTeX} 209$ (!) packages also seem to like to redefine `\enddocument`. In addition to the old `endfloat`, `harvard` comes to mind. All of these will need to be modified swiftly. **If possible, update to $\text{\LaTeX} 2_{\epsilon}$!**

3.3 `lastpage` package

This package first started as a revision of the `lastpage` package of Jeffrey P. Goldberg (jeffrey+news at goldmark dot org), but it became obvious that a replacement was needed. For backward compatibility, a label named `LastPage` is provided. Thus `\usepackage{lastpage}` can be replaced by

```
\usepackage[pagecontinue=false,alphMult=0,AlphMulti=0,fnsymbolmult=false,romanMult=false,RomanMulti=false]{pagesLTS},
```

if the behaviour of the `lastpage` package should be simulated. Using **old** (!) versions of the `lastpage` before the `pagesLTS` before the `hyperref` [2010/06/18 v6.81g] package results in multiply definitions of the `LastPage` label. While the `pagesLTS` package cancels the command `\lastpage@putlabel` from the old `lastpage` package (because it does this itself, and better), `hyperref` redefines `\lastpage@putlabel`

⁴The “new” version is nearly 15 years old, so it might be time to update to this version, if you did not do it already.

and thereby reintroduces it again (`hyperref` should probably check for the version of this `lastpage` package and/or whether the `pagesLTS` package was also loaded.)

3.4 Using an unknown page numbering scheme

I do not know whether $\text{\LaTeX} 2_\epsilon$ can handle another page numbering scheme (e.g. hebraic), but if you want to use it, this should be no problem for the `pagesLTS` package. But the original `\pagenumbering{...}` as well as the `hyperref` package (if used) might want to vote against it, especially when used together with the `pagesLTS` package. Especially especially (*sic!*) if the last page uses this new page numbering scheme, you should check everything double (at least).

(And if the number format is unknown to \LaTeX , the pages will have no number, and therefore cannot be referenced. You might be able to help yourself by using the `hyperref` package and manually placing `\hypertargets` and `\hrefs`.)

3.5 Page counter overflow

Without the use of the `alphalph` package, the

“ranges of supported counter values are more or less restricted. Only `\arabic` can be used with any counter value \TeX supports.

Presentation command	Supported domain	Ignored values	Error message ‘Counter too large’
<code>\arabic</code>	<code>-MAX..MAX</code>		
<code>\roman</code> , <code>\Roman</code>	<code>1..MAX</code>	<code>-MAX..0</code>	
<code>\alph</code> , <code>\Alph</code>	<code>1..26</code>	<code>0</code>	<code>-MAX..-1</code> , <code>27..MAX</code>
<code>\fnsymbol</code>	<code>1..9</code>	<code>0</code>	<code>-MAX..-1</code> , <code>10..MAX</code>

`MAX = 2147483647`

” (Heiko Oberdiek: The `alphalph` package, 2010/04/18, v2.3, first table, p. 2).

Please see subsections [2.1.2](#) and [2.1.3](#) for instructions how to overcome these limitations.

3.6 Using the `fnsymbol` page numbering scheme

Using the `fnsymbol` page numbering scheme can result in problems – big ones!

When using this page numbering scheme, it is very important to use `\lastpageref{...}` instead of `\pageref{...}` for any link to any label provided by the `pagesLTS` package.

While the `pagesLTS` package tries really very hard to circumvent any problem, other packages might skew up – and quite totally for that. So, you have been warned!

- There can be a counter overflow, see preceding subsection 3.5.
- Adobe Acrobat Reader 9.3.3 does not show the correct page names for all pages with `fnsymbol` page numbering scheme:

page number	page name	shown by the Reader	with <code>alphalph</code> package and with <code>pagesLTS</code> package with <code>fnsymbolmult</code> option
-1	LaTeX Error		—*
0	(ignored by L ^A T _E X)		0
1	*	*	*
2	†		†
3	‡		‡
4	§		§
5	¶		¶
6		"026B30D	**
7	**	**	††
8	††		‡‡
9	‡‡		§§
10	LaTeX Error		¶¶
11	LaTeX Error		* * *
12	LaTeX Error		† † †

and so on, while at least the (... of ...) part of the page number is displayed correctly (see page 4, tip about logical page numbers). When the `alphalph` package and the `pagesLTS` package with `fnsymbolmult` option are used, page names like —*, 0, *, ** are also presented correctly by the Reader.

4 Alternatives

There are similar packages, which do (or do not) similar things. As I neither know what exactly you want to accomplish when using this package (e. g. page number vs. page name, hyperlinks or not), nor what resources you have (e. g. ε -T_EX), here is a list of some possible alternatives:

`LastPage`

- The `LastPage` package also provides the `LastPage` label (but not `VeryLastPage` or `LastPages`). If you only want this and have a quite limited amount of T_EX resources, you might want to use that package instead.
- If L^AT_EX 2.09 is still used, and if you are unable to switch to L^AT_EX 2_ε, the L^AT_EX 2.09 compatible `lastpage209.sty` can be used (which is also contained in the recent `LastPage` package).

`totpages`

- The `totpages` package provides a `totpages` label similar to `LastPages`, but `\AtEndDocument` instead of `\AfterLastShipout`. Therefore you should stay with `pagesLTS`. The `totpages` package additionally computes the number of paper sheets needed to (double) print the document (with one, two, three, . . . pages on one sheet of paper).

`nofm.sty`

- “There is a package `nofm.sty` available, but some versions of it are defective, and most don’t work with `fancyhdr` because they take over the complete page layout.” (Piet van Oostrum: Page layout in L^AT_EX, March 2, 2004, section 16; `fancyhdr.pdf`)
`nofm` as of 1991/02/25 (without version number), available at <ftp://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty>, does not work with e. g. `hyperref`, redefines `\enddocument` as well as `\@oddhead`, `\@evenhead`, `\@oddfoot`, and `\@evenfoot`. If you know the (CTAN:) location of a **working** (!) version, please send me an e-mail, thanks!

`count1to`

- You may want to have a look at the `count1to` package.

`zref`

- The `zref` package of Heiko Oberdiek requires ε -T_EX. `pagesLTS` does not require ε -T_EX, but if you already have ε -T_EX, you may have a look at the extensive `zref` package, whether it suits your needs better (or additionally or whatsoever).

(You programmed or found another alternative, which is available at CTAN:?)

OK, send an e-mail to me with the name, location at CTAN:, and a short notice, and I will probably include it in the list above.)

About how to get those packages, please see subsection 7.1.

5 Example

```
1 \example
2 \documentclass[british]{article}
3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
4 \usepackage{alphalph}[2010/04/18]% v2.3
5 \usepackage{lipsum}[2005/01/26]% v1.0
6 \usepackage[draft]{showkeys}[2007/08/07]% v3.15
7 %%      Use final instead of draft to hide the keys. %%
8 \usepackage{hyperref}[2010/06/18]% v6.81g
9 \hypersetup{
10  extension=pdf,%
11  plainpages=false,%
12  pdfpagelabels=true,%
13  hyperindex=false,%
14  pdflang={en},%
15  pdftitle={pagesLTS package example},%
16  pdfauthor={Hans-Martin Muench},%
17  pdfsubject={Example for the pagesLTS package},%
18  pdfkeywords={LaTeX, pagesLTS, Hans-Martin Muench},%
19  pdfview=Fit,%
20  pdfstartview=Fit,%
21  pdfpagelayout=SinglePage,%
22  bookmarksopen=true%
23 }
24 \usepackage[pagecontinue=true,alphMult=ab,AlphMulti=AB,fnsymbolmult=true,romanMult=true,RomanMulti=true]{pagesLTS}[2010/08/25]% v1.1i
25 %% These are the default options. %%
26 \makeatletter
27   \renewcommand{\@evenfoot}{%
28     {Page \thepage\ (\thecurrentpage; local: \thecurrentpagelocal) of %
29     \lastpageref{pagesLTS.roman}(\lastpageref{pagesLTS.roman.local}) + %
30     \lastpageref{pagesLTS.Roman}(\lastpageref{pagesLTS.Roman.local}) + %
31     \lastpageref{pagesLTS.arabic}(\lastpageref{pagesLTS.arabic.local}) + %
32     \lastpageref{pagesLTS.fnsymbol}(\lastpageref{pagesLTS.fnsymbol.local}) + %
33     \lastpageref{pagesLTS.alph}(\lastpageref{pagesLTS.alph.local}) + %
34     \lastpageref{pagesLTS.Alph}(\lastpageref{pagesLTS.Alph.local}) = %
35     \lastpageref{LastPages} pages.%
36   }
37   \renewcommand{\@oddfoot}{\@evenfoot}
38   \def\pagesLTSexampleArabic{3}
39   \def\pagesLTSexamplealph{23}
40   \gdef\unit#1{\mathord{\thinspace\mathrm{#1}}}%
41 \makeatother
42 \listfiles
43 \begin{document}
44 \pagenumbering{roman}
```



```

45 %% Note the first \pagenumbering immediately behind \begin{document}. %%
46
47 %%\addtocounter{page}{-2} %%
48
49 \section*{Example for pagesLTS}
50 \addcontentsline{toc}{section}{Example for pagesLTS}
51 \markboth{Example for pagesLTS}{Example for pagesLTS}
52
53 This example demonstrates the most common uses of package\
54 \textsf{pagesLTS}, v1.1i as of 2010/08/25 (HMM).\
55 The used options were \texttt{pagecontinue=true},
56 \texttt{alphMult=ab}, \texttt{AlphMulti=AB}, \linebreak
57 \texttt{fnsymbolmult=true},
58 \texttt{romanMult=true}, and \texttt{RomanMulti=true}
59 (the default ones).\
60 For more details please see the documentation!\
61
62 \label{keys} To hide the \pageref{keys}{\quad } use option
63 \texttt{final} instead of \texttt{draft} with the \textsf{showkeys}
64 package (or remove the package call from the preamble of
65 this document).\
66
67 \textbf{Trademarks} appear throughout this example without any
68 trademark symbol; they are the property of their respective
69 trademark owner. There is no intention of infringement; the
70 usage is to the benefit of the trademark owner.\
71
72 \textbf{Tip}: Use \textit{logical page numbers} for
73 the display of the pdf!\
74 (In Adobe Reader 9.3.3: \underline{E}dit >>
75 Prefere\underline{n}ces (Ctrl+k) >> Page Display >>
76 Page Content and Information >> Use logical page
77 \nolinebreak{\underline{n}umbers.})\
78
79 You want negative page numbers? Not only arabic, but even roman,
80 Roman, alph, Alph or fnsymbol ones? No problem, e.\,g. just give a\
81 \texttt{\textbackslash addtocounter\{page\}\{- \textit{some number}\}}
82 in the source code of this example file (or uncomment the prepared
83 line)!
84
85 \bigskip
86
87 Save per page about $200\unit{ml}$ water, $2\unit{g}$ CO$_{2}$
88 and $2\unit{g}$ wood:\
89 Therefore please print only if this is really necessary.
90

```

```

91 \newpage
92
93 \tableofcontents
94
95 \newpage
96
97 \pagenumbering{roman}
98 % in case the page numbering is changed before,
99 % otherwise pagesLTS.current.local.roman on this page
100 % would be undefined
101
102 \section{roman}
103
104 \noindent (\texttt{roman} page numbering was started before,
105 because the page numbering scheme was needed to start at
106 the first page, of course.)\\
107
108 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
109 \lastpageref{pagesLTS.0}\\
110
111 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
112
113 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
114 i.\,e. counted continuously from the first page): \theCurrentPage \\
115 You can get this also in other formats:
116 \roman{CurrentPage}, \Roman{CurrentPage}, \arabic{CurrentPage},
117 \fnsymbol{CurrentPage}, \alph{CurrentPage}, \Alph{CurrentPage}.
118
119 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
120 i.\,e. counted continuously from the first page of the
121 current page numbering scheme): \theCurrentPageLocal \\
122 You can get also this in other formats, too:
123 \roman{pagesLTS.current.local.roman}, \Roman{pagesLTS.current.local.roman},
124 \arabic{pagesLTS.current.local.roman}, \fnsymbol{pagesLTS.current.local.roman},
125 \alph{pagesLTS.current.local.roman}, \Alph{pagesLTS.current.local.roman},
126 but probably it only makes sense if page numbering scheme and format are
127 the same, e.\,g.\\
128 \texttt{\textbackslash Roman\{pagesLTS.current.local.Roman\}}\\
129 or \texttt{\textbackslash Alph\{pagesLTS.current.local.Alph\}}.\ %
130 \texttt{\textbackslash arabic\{\ldots \}}\ could make sense
131 even if combined with another page numbering scheme.
132 And this is exactly what \texttt{\textbackslash theCurrentPageLocal} does:\\
133 \nolinebreak{\texttt{\textbackslash def\textbackslash theCurrentPageLocal%
134 \{\textbackslash arabic\{pagesLTS.current.local.\textbackslash pagesLTS@pnc\}\}}.}\\
135
136 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }

```

```

137 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
138
139 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
140 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
141 \lastpages{Roman}{1}~pages in the first Roman sector
142 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
143 \lastpages{Roman}{2}~pages in the second Roman sector
144 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
145 \lastpages{Roman}{3}~pages in the third Roman sector
146 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
147
148 When the option \texttt{pagecontinue=false} is used with the
149 \textsf{pagesLTS} package, the
150 \texttt{\textbackslash lastpageref\{pagesLTS.Roman\}} will point
151 to the same page as before, but this will have a lower number.\\
152 The \texttt{\textbackslash lastpageref\{pagesLTS.Roman.local\}}
153 will not change, because the number of pages does not change
154 (only the page numbers).\\
155
156 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
157 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
158 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\\
159
160 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
161 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
162 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
163 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
164
165 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
166 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
167 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}} was used.)\\
168
169 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
170 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
171
172 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
173
174 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
175 (\texttt{lastpage} and \texttt{VeryLastPage} are identical, unless
176 a package with output \linebreak
177 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
178 was added.)\\
179
180 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
181 (=total number of pages)\\
182

```

```

183 \lipsum[1-3]
184
185 \newpage
186
187 \pagenumbering{Roman}
188
189 \section{Roman\label{Roman}}
190 \subsection{Common Roman page numbering}
191
192 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
193 \lastpageref{pagesLTS.0}\\
194
195 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
196
197 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
198 i.\,e. counted continuously from the first page): \theCurrentPage \\
199
200 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
201 i.\,e. counted continuously from the first page of the
202 current page numbering scheme): \theCurrentPageLocal \\
203
204 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
205 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
206
207 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
208 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
209 \lastpages{Roman}{1}~pages in the first Roman sector
210 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
211 \lastpages{Roman}{2}~pages in the second Roman sector
212 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
213 \lastpages{Roman}{3}~pages in the third Roman sector
214 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
215
216 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
217 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
218 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\\
219
220 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
221 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
222 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
223 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
224
225 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
226 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
227 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}} was used.)\\
228

```

```

229 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
230 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
231
232 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
233
234 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
235 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
236 a package with output \linebreak
237 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
238 was added.)\\
239
240 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
241 (=total number of pages)\\
242
243 \lipsum[1-4]
244
245 \newpage
246
247 \subsection{Last page of first Roman sector}
248 \texttt{\textbackslash lastpageref\{pagesLTS.Roman\}} does \textbf{not}
249 refer to this page (but there: \lastpageref{pagesLTS.Roman}),
250 because the option \texttt{pagecontinue=true}
251 was chosen. When a reference to this page is wanted,\\
252 \texttt{\textbackslash lastpageref\{pagesLTS.Roman.1\}}
253 can be used: \lastpageref{pagesLTS.Roman.1}.\\
254
255 \bigskip
256 There are \lastpages{Roman}{1}~pages
257 (\texttt{\textbackslash lastpages\{Roman\}\{1\}})
258 in this first Roman sector.\\
259 The Roman page numbering scheme is continued later in
260 section~\ref{Roman2})!
261
262 \newpage
263
264 \pagenumbering{arabic}
265
266 \section{arabic}
267
268 \subsection{Standard page numbering}
269
270 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
271 \lastpageref{pagesLTS.0}\\
272
273 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
274

```

275 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
276 i.\,e. counted continuously from the first page): \theCurrentPage \\
277
278 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
279 i.\,e. counted continuously from the first page of the
280 current page numbering scheme): \theCurrentPageLocal \\
281
282 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
283 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
284
285 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
286 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
287 \lastpages{Roman}{1}~pages in the first Roman sector
288 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
289 \lastpages{Roman}{2}~pages in the second Roman sector
290 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
291 \lastpages{Roman}{3}~pages in the third Roman sector
292 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
293
294 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
295 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
296 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\\
297
298 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
299 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
300 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
301 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
302
303 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
304 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
305 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}} was used.)\\
306
307 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
308 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
309
310 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
311
312 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
313 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
314 a package with output \linebreak
315 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
316 was added.)\\
317
318 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
319 (=total number of pages)\\
320

```

321 \lipsum[1-4]
322 \newpage
323
324 \subsection[Empty page style]{Also an empty page style is no problem\ %
325 for the current or total page count}
326
327 \bigskip
328
329 \thispagestyle{empty}
330
331 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
332 \lastpageref{pagesLTS.0}\\
333
334 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
335
336 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
337 i.\,e. counted continuously from the first page): \theCurrentPage \\
338
339 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
340 i.\,e. counted continuously from the first page of the
341 current page numbering scheme): \theCurrentPageLocal \\
342
343 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
344 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
345
346 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
347 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
348 \lastpages{Roman}{1}~pages in the first Roman sector
349 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
350 \lastpages{Roman}{2}~pages in the second Roman sector
351 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
352 \lastpages{Roman}{3}~pages in the third Roman sector
353 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
354
355 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
356 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
357 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\\
358
359 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
360 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
361 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
362 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
363
364 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
365 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
366 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}} was used.)\\

```

```

367
368 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
369 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
370
371 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
372
373 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
374 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
375 a package with output \linebreak
376 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
377 was added.)\\
378
379 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
380 (=total number of pages)\\
381
382 \lipsum[1-4]
383
384 \newpage
385
386 \subsection[addtocounter, setcounter]{Neither\ %
387 \texttt{\textbackslash addtocounter\{page\}} or\ %
388 \texttt{\textbackslash setcounter\{page\}} is a problem for the\ %
389 current or total page numbers}
390
391 (Here is an \texttt{\textbackslash addtocounter\{page\}}{\pagesLTSEXampleArabic\}}
392 in the source code.)\\
393 \addtocounter{page}{\pagesLTSEXampleArabic}
394
395 \noindent The page (from \texttt{\textbackslash thepage} command): \thepage \\
396
397 \noindent Current page (from \texttt{\textbackslash theCurrentPage}\ %
398 command), i.\,e. counted continuously from the first page): \theCurrentPage \\
399
400 \noindent CurrentPageLocal (from \texttt{\textbackslash theCurrentPageLocal}\ %
401 command), i.\,e. counted continuously from the first page of the
402 current page numbering scheme): \theCurrentPageLocal\\
403
404 \noindent Last page's number (LastPages): \lastpageref{LastPages}{\hskip3em }
405 (= total number of pages)\\
406
407 \lipsum[1-7]
408
409 \newpage
410
411 \pagenumbering{fnsymbol}
412

```



```

413 \section{fnsymbol}
414
415 Adobe Acrobat Reader 9.3.3 does not show the correct page names
416 for all pages with \texttt{fnsymbol} page numbering scheme:
417
418 \begin{tabular}{c|c|c|c}
419 page number & page name & & shown by the Reader & \textsf{alphalph} & \\ \hline
420 $-1$ & \texttt{LaTeX Error} & & & \ensuremath {- *} & \\
421 $0$ & (ignored by \LaTeX) & & & 0 & \\
422 $1$ & \ensuremath {*} & & & \ensuremath {*} & \\
423 $2$ & \ensuremath {\dag} & & & \ensuremath {\dag} & \\
424 $3$ & \ensuremath {\ddag} & & & \ensuremath {\ddag} & \\
425 $4$ & \ensuremath {\mathsection} & & & \ensuremath {\mathsection} & \\
426 $5$ & \ensuremath {\mathparagraph} & & & \ensuremath {\mathparagraph} & \\
427 $6$ & \ensuremath {\delimiter "026B30D} & & "026B30D & \ensuremath {**} & \\
428 $7$ & \ensuremath {**} & & & \ensuremath {\dag \dag} & \\
429 $8$ & \ensuremath {\dag \dag} & & & \ensuremath {\ddag \ddag} & \\
430 $9$ & \ensuremath {\ddag \ddag} & & & \ensuremath {\mathsection \mathsection} & \\
431 $10$ & \texttt{LaTeX Error} & & & \ensuremath {\mathparagraph \mathparagraph} & \\
432 $11$ & \texttt{LaTeX Error} & & & \ensuremath {***} & \\
433 $12$ & \texttt{LaTeX Error} & & & \ensuremath {\dag \dag \dag} & \\
434 \end{tabular}
435
436 \noindent and so on, while at least the (\ldots\ of \ldots ) part
437 of the page number is displayed correctly.\\
438
439 \bigskip
440
441 Without option \texttt{fnsymbolmult=true} of the \textsf{pagesLTS} package
442 (and the help of Heiko Oberdiek's \textsf{alphalph} package),
443 after page~9
444 (\textquotedblleft \ensuremath {\ddag \ddag} \textquotedblright )
445 (and also for negative page numbers) there would just appear a
446 \begin{quote}
447 \begin{verbatim}
448 LaTeX Error: Counter too large
449 See the LaTeX manual or LaTeX Companion for explanation.
450 You've lost some text. Try typing <return> to proceed.
451 If that doesn't work, type X <return> to quit.
452 \end{verbatim}
453 \end{quote}
454 Now the page numbers after 5 (\ensuremath {\mathparagraph} ) are
455 continued with the doubled \textquotedblleft number\textquotedblright\ of
456 the first, second, third,\ldots\ page (\ensuremath {**},
457 \ensuremath {\dag \dag}, \ensuremath {\ddag \ddag},
458 \ensuremath {\mathsection \mathsection} ,

```

```

459 \ensuremath {\mathparagraph \mathparagraph }},
460 and after the tenth page the \textquotedblleft number\textquotedblright\ is
461 tripled (\ensuremath {***}, \ensuremath {\dagger \dagger \dagger },\ldots).
462 Page zero is named 0 and negative pages just named like the positive ones
463 with addition of a minus sign~($-$).
464
465 \bigskip
466
467 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
468 \lastpageref{pagesLTS.0}\\
469
470 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
471
472 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
473 i.\,e. counted continuously from the first page): \theCurrentPage \\
474
475 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
476 i.\,e. counted continuously from the first page of the
477 current page numbering scheme): \theCurrentPageLocal \\
478
479 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
480 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
481
482 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
483 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
484 \lastpages{Roman}{1}~pages in the first Roman sector
485 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
486 \lastpages{Roman}{2}~pages in the second Roman sector
487 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
488 \lastpages{Roman}{3}~pages in the third Roman sector
489 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
490
491 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
492 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
493 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\\
494
495 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
496 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
497 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
498 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
499
500 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
501 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
502 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}} was used.)\\
503
504 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }

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```

505 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
506
507 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
508
509 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
510 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
511 a package with output \linebreak
512 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
513 was added.)\\
514
515 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
516 (=total number of pages)\\
517
518 \lipsum[1-60]
519
520 \newpage
521
522 \pagenumbering{Roman}
523
524 \section{Roman - again!\label{Roman2}}
525
526 The page number would start with
527 \textquotedblleft I\textquotedblright\ again -- but
528 for the \textsf{pagesLTS} package (with option \texttt{pagecontinue=true},
529 or with option just \texttt{pagecontinue}, or even just
530 \nolinebreak{with\textbf{out}} option \texttt{pagecontinue=false}).
531 This package remembered the
532 (\arabic{pagesLTS.double.Roman}-1)\footnote{OK, here\ %
533 you have to compute this value for yourself, but\ %
534 subtracting one should be manageable for \TeX nicians.} pages already
535 done in Roman output, and therefore continues with page
536 \textquotedblleft \thepage \textquotedblright .\\
537 If you want to start with \textquotedblleft I\textquotedblright\ all
538 over again, you will have two pages with the same name,
539 but nevertheless you can do this by using option \texttt{pagecontinue=false}
540 or a \texttt{\textbackslash setcounter\{page\}\{1\}}\ here
541 (not demonstrated in this example file).\\
542
543 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
544 \lastpageref{pagesLTS.0}\\
545
546 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
547
548 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
549 i.\,e. counted continuously from the first page): \theCurrentPage \\
550

```

```

551 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
552 i.\,e. counted continuously from the first page of the
553 current page numbering scheme): \theCurrentPageLocal \\
554
555 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
556 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
557
558 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
559 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
560 \lastpages{Roman}{1}~pages in the first Roman sector
561 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
562 \lastpages{Roman}{2}~pages in the second Roman sector
563 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
564 \lastpages{Roman}{3}~pages in the third Roman sector
565 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
566
567 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
568 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
569 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\\
570
571 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
572 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
573 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
574 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
575
576 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
577 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
578 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}} was used.)\\
579
580 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
581 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
582
583 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
584
585 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
586 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
587 a package with output \linebreak
588 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
589 was added.)\\
590
591 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
592 (=total number of pages)\\
593
594 \lipsum[1-6]
595
596 \newpage

```

```

597
598 \texttt{\textbackslash lastpageref\{pagesLTS.Roman\}} does \textbf{not}
599 refer to this page (but there: \lastpageref{pagesLTS.Roman}),
600 because the option \texttt{pagecontinue=true}
601 was chosen. When a reference to this page is wanted,\
602 \texttt{\textbackslash lastpageref\{pagesLTS.Roman.2\}}
603 can be used: \lastpageref{pagesLTS.Roman.2}.\
604
605 \bigskip
606 There are \lastpages{Roman}{2}~pages
607 (\texttt{\textbackslash lastpages\{Roman\}\{2\}})
608 in this second Roman sector.\
609 The Roman page numbering scheme is continued later in
610 section~\ref{Roman3})!
611
612 \newpage
613
614 \pagenumbering{alph}
615
616 \section{alph\label{alph}}
617
618 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
619 \lastpageref{pagesLTS.0}\
620
621 \noindent The page (\texttt{\textbackslash thepage}): \thepage \
622
623 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
624 i.\,e. counted continuously from the first page): \theCurrentPage \
625
626 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
627 i.\,e. counted continuously from the first page of the
628 current page numbering scheme): \theCurrentPageLocal \
629
630 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
631 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
632
633 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
634 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
635 \lastpages{Roman}{1}~pages in the first Roman sector
636 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
637 \lastpages{Roman}{2}~pages in the second Roman sector
638 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
639 \lastpages{Roman}{3}~pages in the third Roman sector
640 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\
641
642 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }

```

643 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
644 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\\
645
646 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
647 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
648 \texttt{\textbackslash pagerref\{pagesLTS.fnsymbol\}}!)\\
649 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
650
651 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}\{\hskip4em }
652 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
653 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}} was used.)\\
654
655 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}\{\hskip4em }
656 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
657
658 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
659
660 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
661 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
662 a package with output \linebreak
663 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
664 was added.)\\
665
666 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}\{\hskip3em }
667 (=total number of pages)\\
668
669 \lipsum[1-4]
670
671 \newpage
672
673 Without option \texttt{alphMult=ab} of the \textsf{pagesLTS} (and the help of
674 Heiko Oberdiek's \textsf{alphalph} package), after page
675 \textquotedblleft z\textquotedblright there would just appear a
676 \begin{quote}
677 \begin{verbatim}
678 LaTeX Error: Counter too large
679 See the LaTeX manual or LaTeX Companion for explanation.
680 You've lost some text. Try typing <return> to proceed.
681 If that doesn't work, type X <return> to quit.
682 \end{verbatim}
683 \end{quote}
684 Now the page numbers are continued aa, ab, ac,\ldots\ (aa, bb, cc,\ldots\ is
685 also possible, see the \textsf{pagesLTS} documentation.)\\
686 To demonstrate this, we add a\\
687 \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}}\\
688 in the source code here.

```

689
690 \addtocounter{page}{\pagesLTSexamplealph}
691
692 \bigskip
693
694 \lipsum[1-18]
695
696 \newpage
697
698 \pagenumbering{Roman}
699
700 \section{Roman - third time!\label{Roman3}}
701
702 The page number would start with
703 \textquotedblleft I\textquotedblright\ again -- but
704 for the \textsf{pagesLTS} package (with option \texttt{pagecontinue=true},
705 or with option just \texttt{pagecontinue}, or even just
706 \nolinebreak[with\textbf{out}] option \texttt{pagecontinue=false}).
707 This package remembered the
708 (\arabic{pagesLTS.double.Roman}-1)\footnote{OK, here\ %
709 you have to compute this value for yourself, but\ %
710 subtracting one should be managable for \TeX nicians.} pages already
711 done in Roman output, and therefore continues with page
712 \textquotedblleft \thepage \textquotedblright .\
713 If you want to start with \textquotedblleft I\textquotedblright\ all
714 over again, you will have (at least) two pages with the same name,
715 but nevertheless you can do this by using option
716 \texttt{pagecontinue=false} instead of \texttt{pagecontinue=true}
717 (not demonstrated here).\
718
719 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
720 \lastpageref{pagesLTS.0}\
721
722 \noindent The page (\texttt{\textbackslash thepage}): \thepage \
723
724 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
725 i.\,e. counted continuously from the first page): \theCurrentPage \
726
727 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
728 i.\,e. counted continuously from the first page of the
729 current page numbering scheme): \theCurrentPageLocal \
730
731 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
732 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
733
734 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }

```

735 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
736 \lastpages{Roman}{1}~pages in the first Roman sector
737 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
738 \lastpages{Roman}{2}~pages in the second Roman sector
739 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
740 \lastpages{Roman}{3}~pages in the third Roman sector
741 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
742
743 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
744 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
745 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSEXAMPLEARABIC\}} was used.)\\
746
747 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
748 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
749 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
750 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
751
752 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
753 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
754 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSEXAMPLEALPH\}} was used.)\\
755
756 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
757 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
758
759 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
760
761 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
762 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
763 a package with output \linebreak
764 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
765 was added.)\\
766
767 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
768 (=total number of pages)\\
769
770 \lipsum[1-3]
771
772 \newpage
773
774 \lastpageref{pagesLTS.Roman}
775 (\texttt{\textbackslash lastpageref\{pagesLTS.Roman\}})
776 \textbf{does} refers to this page, because the option
777 \texttt{pagecontinue=true} was chosen. Also\\
778 \texttt{\textbackslash lastpageref\{pagesLTS.Roman.3\}}
779 can be used: \lastpageref{pagesLTS.Roman.3}.\\
780


```

781 \bigskip
782
783 There are \lastpages{Roman}{3}~pages
784 (\texttt{\textbackslash lastpages\{Roman\}\{3\}})
785 in this third Roman sector.\
786
787 \newpage
788
789 \pagenumbering{Alph}
790
791 \section{Alph}
792
793 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
794 \lastpageref{pagesLTS.0}\
795
796 \noindent The page (\texttt{\textbackslash thepage}): \thepage \
797
798 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
799 i.\,e. counted continuously from the first page): \theCurrentPage \
800
801 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
802 i.\,e. counted continuously from the first page of the
803 current page numbering scheme): \theCurrentPageLocal \
804
805 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
806 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
807
808 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
809 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
810 \lastpages{Roman}{1}~pages in the first Roman sector
811 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
812 \lastpages{Roman}{2}~pages in the second Roman sector
813 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
814 \lastpages{Roman}{3}~pages in the third Roman sector
815 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\
816
817 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
818 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
819 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\
820
821 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \
822 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
823 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!\)\
824 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\
825
826 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }

```

827 (There are only `\lastpageref{pagesLTS.alph.local}` pages with alph numbers,
828 because an `\texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}}` was used.)\\
829
830 \noindent Last Alph page (`pagesLTS.Alph`): `\lastpageref{pagesLTS.Alph}\hskip4em` }
831 (There are `\lastpageref{pagesLTS.Alph.local}` pages with Alph numbers.)\\
832
833 \noindent Last page's `\textit{name}` (`LastPage`): `\lastpageref{LastPage}`\\
834
835 \noindent Very last page's `\textit{name}` (`VeryLastPage`): `\lastpageref{VeryLastPage}`\\
836 (`\texttt{LastPage}` and `\texttt{VeryLastPage}` are identical, unless
837 a package with output `\linebreak`
838 `\texttt{\textbackslash AtEndDocument}` after the `\textsf{pagesLTS}` package
839 was added.)\\
840
841 \noindent Last page's `\textit{number}` (`LastPages`): `\lastpageref{LastPages}\hskip3em` }
842 (=total number of pages)\\
843
844 \lipsum[1-3]
845
846 Without option `\texttt{alphMulti=AB}` of the `\textsf{pagesLTS}` (and the help of
847 Heiko Oberdiek's `\textsf{alphalph}` package), after page
848 `\textquotedblleft Z\textquotedblright` there would just appear a
849 `\begin{quote}`
850 `\begin{verbatim}`
851 LaTeX Error: Counter too large
852 See the LaTeX manual or LaTeX Companion for explanation.
853 You've lost some text. Try typing <return> to proceed.
854 If that doesn't work, type X <return> to quit.
855 `\end{verbatim}`
856 `\end{quote}`
857 Now the page numbers are continued AA, AB, AC,\ldots\ (AA, BB, CC,\ldots\ is
858 also possible, see the `\textsf{pagesLTS}` documentation).\\
859 This is not demonstrated here, but see section~\ref{alph}.
860
861 \newpage
862
863 \section{The End}
864
865 \noindent First page (`\texttt{\textbackslash lastpageref\{pagesLTS.0\}}`):
866 `\lastpageref{pagesLTS.0}`\\
867
868 \noindent The page (`\texttt{\textbackslash thepage}`): `\thepage` \\
869
870 \noindent Current page (`\texttt{\textbackslash theCurrentPage}`),
871 i.\,e. counted continuously from the first page): `\theCurrentPage` \\
872

873 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
874 i.\,e. counted continuously from the first page of the
875 current page numbering scheme): \theCurrentPageLocal \\
876
877 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
878 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
879
880 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
881 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
882 \lastpages{Roman}{1}~pages in the first Roman sector
883 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
884 \lastpages{Roman}{2}~pages in the second Roman sector
885 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
886 \lastpages{Roman}{3}~pages in the third Roman sector
887 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
888
889 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
890 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
891 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexampleArabic\}} was used.)\\
892
893 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
894 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
895 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
896 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
897
898 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
899 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
900 because an \texttt{\textbackslash addtocounter\{page\}\{\pagesLTSexamplealph\}} was used.)\\
901
902 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
903 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
904
905 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
906
907 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
908 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
909 a package with output \linebreak
910 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
911 was added.)\\
912
913 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
914 (=total number of pages)\\
915
916 \medskip
917
918 \noindent Page \thepage\ (\theCurrentPage; local: \theCurrentPageLocal) of %

```

919 \lastpageref{pagesLTS.roman} (\lastpageref{pagesLTS.roman.local}) + %
920 \lastpageref{pagesLTS.Roman} (\lastpageref{pagesLTS.Roman.local}) + %
921 \lastpageref{pagesLTS.arabic} (\lastpageref{pagesLTS.arabic.local}) + %
922 \lastpageref{pagesLTS.fnsymbol} (\lastpageref{pagesLTS.fnsymbol.local}) + %
923 \lastpageref{pagesLTS.alph} (\lastpageref{pagesLTS.alph.local}) + %
924 \lastpageref{pagesLTS.Alph} (\lastpageref{pagesLTS.Alph.local}) = %
925 \lastpageref{LastPages} pages.
926
927 \end{document}
928 </example>

```

6 The implementation

(This and the source code of the example file are the reasons for printing the documentation in landscape format instead of portrait.)

We start off by checking that we are loading into L^AT_EX 2_ε and announcing the name and version of this package.

```
929 \*package)
930 \NeedsTeXFormat{LaTeX2e}[1994/06/01]
931 \ProvidesPackage{pagesLTS}[2010/08/25 v1.1i
932           Refers to special pages' numbers/names (HMM)]%
933
```

A short description of the `pagesLTS` package:

```
934 %% Allows for things like\
935 %% |Page \thepage\ (\theCurrentPage; local: \theCurrentPageLocal) of %
936 %% \lastpageref{pagesLTS.roman}(\lastpageref{pagesLTS.roman.local}) + %
937 %% \lastpageref{pagesLTS.Roman}(\lastpageref{pagesLTS.Roman.local}) + %
938 %% \lastpageref{pagesLTS.arabic}(\lastpageref{pagesLTS.arabic.local}) + %
939 %% \lastpageref{pagesLTS.fnsymbol}(\lastpageref{pagesLTS.fnsymbol.local}) + %
940 %% \lastpageref{pagesLTS.alph}(\lastpageref{pagesLTS.alph.local}) + %
941 %% \lastpageref{pagesLTS.Alph}(\lastpageref{pagesLTS.Alph.local}) = %
942 %% \lastpageref{LastPages} pages.|\
943 %% to get\
944 %% 'Page d (57; local: 4) of ii(2) + XX(20) + *(1) + 30(30) + e(5) + C(3) = 61 pages.'.
945
```

For its `\AfterLastShipout` command we need the `atveryend` package of Heiko Oberdiek (see subsection 7.1):

```
946 \RequirePackage{atveryend}[2010/03/24]% v1.5
```

For its `\EveryShipout` command we need the `everyshi` package of Martin Schröder (see subsection 7.1):

```
947 \RequirePackage{everyshi}[2001/05/15]%v 3.00
```

For the handling of the options we need the `kvoptions` package of Heiko Oberdiek (see subsection 7.1):

```
948 \RequirePackage{kvoptions}[2010/02/22]% v3.7
```

The `undolabl` package of H.-Martin Münch, with code from **Ulrich Diez**, (see subsection 7.1) is needed to overwrite labels, when the same page numbering scheme is used twice (or even more often).

```
949 \RequirePackage{undolabl}[2010/07/29]% v1.0f
```

We must not forget to give the source of `Prelim@EveryShipout`:

```
950 %% pagesLTS package uses Prelim@EveryShipout code from the
951 %% prelim2e package [2009/05/29 v1.3] by Martin Schröder, thanks!
952
```

About the `prelim2e` package of Martin Schröder see subsection 7.1.

A last information for the user(s):

```
953 %% pagesLTS may work with earlier versions of those packages,  
954 %% but this was not tested. Please consider updating your packages  
955 %% to the most recent version (if they are not already the most  
956 %% recent version).  
957
```

See subsection 7.1 about how to get them.

The very old version 2.0 (and earlier) of the `endfloat` package actually redefined the `\enddocument` command, and so interfered drastically with the $\text{\LaTeX 2}_{\epsilon}$ commands which make use of `\AtEndDocument`. Newer versions of `endfloat` exists (at the time of writing this documentation: v2.4i as of 1995/10/11) in modern documentation form, which are available from CTAN: (see subsection 7.1). A note is placed here, and later it is checked whether a (very) old `endfloat` package is in use. If it is, a warning or even an error message is given, depending on `endfloat` version. This assumes, that the old versions of `endfloat` at least gave a version date, of course.

```
958 %% The recent version of the endfloat package is v2.4i as of 1995/10/11.  
959 %% The pagesLTS package is not fully compatible with version 2.0  
960 %% (and earlier) of the endfloat package, because those versions  
961 %% redefined the \enddocument command.  
962
```

The options are introduced:

```
963 \SetupKeyvalOptions{family = pagesLTS,prefix = pagesLTS@}  
964 \DeclareBoolOption[true]{pagecontinue} % \pagesLTS@pagecontinue  
965 \DeclareStringOption[alphMult]{ab}  
966 \DeclareStringOption[AlphMulti]{AB}  
967 \DeclareBoolOption[true]{romanMult}  
968 \DeclareBoolOption[true]{RomanMulti}  
969 \DeclareBoolOption[true]{fnsymbolmult}  
970  
971 \ProcessKeyvalOptions*  
972
```

For comparisons, zero and one are defined (`\z@` and `\@one` do not work for this).

```
973 \def\pagesLTS@zero{0}  
974 \def\pagesLTS@one{1}  
975
```

The traditional behaviour is a reset of the page number to one, each time the page numbering scheme changes. The option `pagecontinue` changes this to a continuation with the number/name following the last page number/name of the same page numbering scheme. The user is informed accordingly.

```
976 \ifpagesLTS@pagecontinue%  
977   \PackageInfo{pagesLTS}{Option pagecontinue enabled\MessageBreak%  
978     (maybe by default):\MessageBreak%  
979   The pagesLTS package will continue the page numbering,\MessageBreak%  
980   when the same page numbering scheme is used twice.\MessageBreak%  
981
```

```

981   If you do not want this, call pagesLTS with option\MessageBreak%
982   pagecontinue=false\MessageBreak%
983   (or use \ setcounter{page}=1).\MessageBreak%
984 }%
985 \else%
986 \PackageWarningNoLine{pagesLTS}{Option pagecontinue is false:\MessageBreak%
987   The pagesLTS package was used, but the option\MessageBreak%
988   pagecontinue was set to false.\MessageBreak%
989   If you want the page numbers to be continued,\MessageBreak%
990   when the same page numbering scheme is used twice,\MessageBreak%
991   please call pagesLTS with option pagecontinue=true,\MessageBreak%
992   otherwise the page number is reset to one each time\MessageBreak%
993   the page numbering scheme is changed.\MessageBreak%
994   For details please see the documentation!\MessageBreak%
995 }%
996 \fi%
997

```

The page number printed in `alph` or in `Alph` page numbering scheme had to be > 0 and < 27 . Now the `alphalph` package allows to extend the numbering scheme (not only for pages). Because some users prefer `aa`, `ab`, `ac`, `ad`,... and some `aa`, `bb`, `cc`, `dd`,..., both schemes can be choosen via the options. The `fnsymbol` page numbering scheme was restricted to values > 0 and < 10 . The `alphalph` package allows to extend this page numbering scheme, too. Option `fnsymbolmult` can be choosen with the `pagesLTS` package. If no extension is wished (or another extension is wished and implemented manually), `pagesLTS` can be called with options set to 0 (zero) and flase: `alphMult=0`, `AlphMulti=0`, `fnsymbolmult=false`.

```

998 \def\pagesLTS@ab{ab}
999 \def\pagesLTS@bb{bb}
1000 \def\pagesLTS@ABi{AB}
1001 \def\pagesLTS@BBi{BB}
1002 \def\pagesLTS@messageaMz{Option alphMult=0 found:\MessageBreak%
1003   The pagesLTS package was used, but the option\MessageBreak%
1004   alphMult was set to 0 (zero).\MessageBreak%
1005   If you want the page numbers to be extended\MessageBreak%
1006   after z, you have to organize this yourself now.\MessageBreak%
1007   For automatic continuation, please use the\MessageBreak%
1008   alphalph package and call pagesLTS\MessageBreak%
1009   with option alphMult=ab (for aa, ab, ac, ad,...) or\MessageBreak%
1010   with option alphMult=bb (for aa, bb, cc, dd,...).\MessageBreak%
1011   For details please see the documentation!\MessageBreak%
1012 }
1013 \def\pagesLTS@messageAMiz{Option AlphMulti=0 found:\MessageBreak%
1014   The pagesLTS package was used, but the option\MessageBreak%
1015   AlphMulti was set to 0 (zero).\MessageBreak%
1016   If you want the page numbers to be extended\MessageBreak%
1017   after Z, you have to organize this yourself now.\MessageBreak%
1018   For automatic continuation, please use the\MessageBreak%
1019   alphalph package and call pagesLTS\MessageBreak%

```

```

1020 with option AlphMulti=AB (for AA, AB, AC, AD,...) or\MessageBreak%
1021 with option AlphMulti=BB (for AA, BB, CC, DD,...).\MessageBreak%
1022 For details please see the documentation!\MessageBreak%
1023 }
1024 \def\pagesLTS@messagefsmz{Option fnsymbolmult is set to false:\MessageBreak%
1025 The pagesLTS package was used, but the option\MessageBreak%
1026 fnsymbolmult was set to false.\MessageBreak%
1027 If you want the page numbering of the footnotesymbol\MessageBreak%
1028 scheme to be extended using the alphalph package,\MessageBreak%
1029 please call pagesLTS with option fnsymbolmult=true,\MessageBreak%
1030 otherwise page numbers of the footnotesymbol scheme\MessageBreak%
1031 greater than nine will need to be defined otherwise.\MessageBreak%
1032 For details please see the documentation!\MessageBreak%
1033 }
1034
1035 \ifx\pagesLTS@alphMult\pagesLTS@ab%
1036 \relax%
1037 \else%
1038 \ifx\pagesLTS@alphMult\pagesLTS@bb%
1039 \relax%
1040 \else%
1041 \ifx\pagesLTS@alphMult\pagesLTS@zero%
1042 \PackageWarningNoLine{pagesLTS}{\pagesLTS@messageaMz }%
1043 \else%
1044 \PackageError{pagesLTS}{Unknown option value}%
1045 {The pagesLTS package was used with option\MessageBreak%
1046 alphMult= \pagesLTS@alphMult . Only values\MessageBreak%
1047 ab, bb, and 0 (zero) are valid.\MessageBreak%
1048 The default ab is set.\MessageBreak%
1049 For details please see the documentation!\MessageBreak%
1050 }%
1051 \setkeys{pagesLTS}{alphMult=ab}%
1052 \fi%
1053 \fi%
1054 \fi%
1055
1056 \ifx\pagesLTS@AlphMulti\pagesLTS@ABi%
1057 \relax%
1058 \else%
1059 \ifx\pagesLTS@AlphMulti\pagesLTS@BBi%
1060 \relax%
1061 \else%
1062 \ifx\pagesLTS@AlphMulti\pagesLTS@zero%
1063 \PackageWarningNoLine{pagesLTS}{\pagesLTS@messageAMiz }%
1064 \else%
1065 \PackageError{pagesLTS}{Unknown option value}%

```



```

1066 {The pagesLTS package was used with option\MessageBreak%
1067 AlphMulti= \pagesLTS@AlphMulti . Only values\MessageBreak%
1068 AB, BB, and 0 (zero) are valid.\MessageBreak%
1069 The default AB is set.\MessageBreak%
1070 For details please see the documentation!\MessageBreak%
1071 }%
1072 \setkeys{pagesLTS}{AlphMulti=AB}%
1073 \fi%
1074 \fi%
1075 \fi%
1076

```

For the roman page numbering scheme, it is just the choice of an extension by pagesLTS or not.

```

1077 \ifpagesLTS@romanMult%
1078 \PackageInfo{pagesLTS}{Option romanMult enabled\MessageBreak%
1079 (maybe by default):\MessageBreak%
1080 The pagesLTS package will extend the page numbering\MessageBreak%
1081 of the roman scheme below i with\MessageBreak%
1082 0, -i, -ii, -iii, -iv,...\MessageBreak%
1083 If you do not want this, call pagesLTS with option\MessageBreak%
1084 romanMult=false.\MessageBreak%
1085 }%
1086 \else%
1087 \PackageWarningNoLine{pagesLTS}{Option romanMult is set to false:\MessageBreak%
1088 The pagesLTS package was used, but the option\MessageBreak%
1089 romanMult was set to false.\MessageBreak%
1090 If you want the page numbering of the roman scheme\MessageBreak%
1091 to be extended below i,\MessageBreak%
1092 please call pagesLTS with option romanMult=true,\MessageBreak%
1093 otherwise zero and negative page numbers of the\MessageBreak%
1094 roman scheme will need to be defined otherwise.\MessageBreak%
1095 For details please see the documentation!\MessageBreak%
1096 }%
1097 \fi%
1098

```

Same for the Roman page numbering scheme.

```

1099 \ifpagesLTS@RomanMulti%
1100 \PackageInfo{pagesLTS}{Option RomanMulti enabled\MessageBreak%
1101 (maybe by default):\MessageBreak%
1102 The pagesLTS package will extend the page numbering\MessageBreak%
1103 of the Roman scheme below I with\MessageBreak%
1104 0, -I, -II, -III, -IV,...\MessageBreak%
1105 If you do not want this, call pagesLTS with option\MessageBreak%
1106 RomanMulti=false.\MessageBreak%
1107 }%
1108 \else%

```

```

1109 \PackageWarningNoLine{pagesLTS}{Option RomanMulti is set to false:\MessageBreak%
1110 The pagesLTS package was used, but the option\MessageBreak%
1111 RomanMulti was set to false.\MessageBreak%
1112 If you want the page numbering of the Roman scheme\MessageBreak%
1113 to be extended below i,\MessageBreak%
1114 please call pagesLTS with option RomanMulti=true,\MessageBreak%
1115 otherwise zero and negative page numbers of the\MessageBreak%
1116 Roman scheme will need to be defined otherwise.\MessageBreak%
1117 For details please see the documentation!\MessageBreak%
1118 }%
1119 \fi%
1120

```

For the footnotesymbol page numbering scheme, it is also just the choice of a extension by pagesLTS or not.

```

1121 \ifpagesLTS@fnsymbolmult%
1122 \PackageInfo{pagesLTS}{Option fnsymbolmult enabled\MessageBreak%
1123 (maybe by default):\MessageBreak%
1124 The pagesLTS package will extend the page numbering\MessageBreak%
1125 of the footnotesymbol scheme using the alphalph\MessageBreak%
1126 package.\MessageBreak%
1127 If you do not want this, call pagesLTS with option\MessageBreak%
1128 fnsymbolmult=false.\MessageBreak%
1129 }%
1130 \else%
1131 \PackageWarningNoLine{pagesLTS}{\pagesLTS@messagefsmz }%
1132 \fi%
1133

```

Now defining some variables, place-holders, and abbreviations:

```

1134 \def\pagesLTS@pnc{0}
1135 \def\pagesLTS@called{0}
1136 \def\pagesLTS@fns{fnsymbol}
1137 \def\pagesLTS@alph{alph}
1138 \def\pagesLTS@Alph{Alph}
1139 \def\pagesLTS@AlphAlph{0}
1140 \def\pagesLTS@hyper{0}
1141 \def\pagesLTS@rerun{0}
1142 \def\pagesLTS@eso{0}
1143 \def\pagesLTS@esov{0}
1144 \def\lastpageref{\lastpagereftxt}
1145 \def\pagesLTS@undolable{none}

```

```

1146 \def\pagesLTS@messageNPN{%
1147   The pagesLTS package was used, but\MessageBreak%
1148   \textbackslash pagenumbering\MessageBreak%
1149   was not called at the beginning of the document\MessageBreak%
1150   (maybe earlier or later).\MessageBreak%
1151   Please use \textbackslash pagenumbering\MessageBreak%
1152   (with an argument like arabic, roman, Roman,\MessageBreak%
1153   fnsymbol, alph, or Alph) at the beginning\MessageBreak%
1154   of your document! Otherwise your document\MessageBreak%
1155   will probably compile, but the pagesLTS\MessageBreak%
1156   package might not be able to get all labels\MessageBreak%
1157   for the references to the respective pages\MessageBreak%
1158   right.\MessageBreak%
1159 }
1160

```

`\pagenumbering` To keep the original meaning of `\pagenumbering`:

```

1161 \let\OrigPagenumbering\pagenumbering
1162

```

Defining some new counters (and doing related things):

```

1163 \newcounter{CurrentPage}
1164 \setcounter{CurrentPage}{1}
1165 \def\theCurrentPageLocal{\arabic{pagesLTS.current.local.\pagesLTS@pnc}}

```

The counter `pagesLTS.pagenr` is for saving the total page number of the last page in the `.aux` file.

```

1166 \newcounter{pagesLTS.pagenr}

```

The `pagesLTS.fnsymbol` and `pagesLTS.fnsymbol.local` need to already have been defined when they are used.

```

1167 \newcounter{pagesLTS.fnsymbol}
1168 \newcounter{pagesLTS.fnsymbol.local}

```

The counter `pagesLTS.fnsymbol.cont` is for the number of pages with `fnsymbol` page numbering scheme which have been put out at the time the value of the counter is read.

```

1169 \newcounter{pagesLTS.fnsymbol.cont}

```

While generally `\pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc}` is used, for the beginning of the document `pagesLTS.current.local.0` is predefined. (A `\pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc}` could be used for this, too, but we know that `pagesLTS.current.local.0` was not defined, so we can just do the definition here.) And the first local page gets the number one.

```

1170 \newcounter{pagesLTS.current.local.0}
1171 \setcounter{pagesLTS.current.local.0}{1}

```

And the same again for `pagesLTS.pnc.0`.

```

1172 \newcounter{pagesLTS.pnc.0}
1173

```

`\xroman` When `\roman{...}` is used with a value < 1 , L^AT_EX just ignores this (see subsection 3.5). Here we provide a command `\xroman{...}` (expanded roman), which gives the usual `\roman` numbers (i, ii, iii, iv,...) for positive values, $-|\dots|$ (i.e. -i, -ii, -iii, -iv,...) for negative values, and 0 for all other values (which should be zero).

```
1174 \newcommand{\xroman}[1]{%
1175   \ifnum\value{#1}>0 %
1176     \roman{#1}%
1177   \else%
1178     \ifnum\value{#1}<0 %
```

`\arabic{#1}` gives the arabic number of argument `#1`, which is negative here (for example -7), “-” puts another minus sign in front of it (for example $--7$), `\number` removes all unnecessary preceding zeros, plus and minus signs (for example 7), `\romannumeral` turns it into a roman number (for example vii), and “-” puts the minus sign back in front of it (for example -vii).

```
1179     -\romannumeral\number-\arabic{#1}
1180   \else%
1181     0%
1182   \fi%
1183 \fi%
1184 }
1185
```

`\XRoman` `\XRoman` does the same for uppercase `\Roman` numbers. `-\uppercase{\romannumeral\number-\arabic{#1}}` cannot be used, because the result in the example is `-\uppercase{vii}` and not `-VII`.⁵ Therefore we have a look at L^AT_EX’s own `\@Roman\F00counter`, `\def\@Roman#1{\expandafter\@slowromancap\romannumeral #1@}`, and use `\@slowromancap`, which is a fully expandable macro, to do the trick for this: “

```
\def\@slowromancap#1{\ifx @#1% then terminate
\else
\if i#1I\else\if v#1V\else\if x#1X\else\if l#1L\else\if
c#1C\else\if d#1D\else \if m#1M\else#1\fi\fi\fi\fi\fi\fi\fi
\expandafter\@slowromancap
\fi
}
```

” (1998/05/16 Version v1.1g LaTeX Kernel File m ltcntrs.dtx 105 Counters and Lengths).

```
1186 \newcommand{\XRoman}[1]{%
1187   \ifnum\value{#1}>0 %
1188     \Roman{#1}%
1189   \else%
1190     \ifnum\value{#1}<0 %
1191       -\expandafter\@slowromancap\romannumeral\number-\arabic{#1}@%
1192     \else%
1193       0%
1194     \fi%
1195   \fi%
```

⁵This does not matter for the print out, but for the display of the logical page numbers as well as the aux file.

```
1196 }
1197
```

`\XXRoman` In older versions `\XXRoman` was used. For compatibility, it is forwarded to `\XRoman` and an error message is given.

```
1198 \newcommand{\XXRoman}[1]{\XRoman{#1}}%
1199 \PackageError{pagesLTS}{Old command \string\XXRoman\space found}{Replaced by \string\XRoman.}%
1200 }
1201
```

`\pagesLTS@ifcounter` We provide a way to create counters like

```
pagesLTS.pnc. page - pagesLTS.pnc.<page numbering scheme>, e.g. pagesLTS.pnc.Roman,
  numbering scheme
pagesLTS.double. page - pagesLTS.double.<page numbering scheme>, e.g. pagesLTS.double.Roman,
  numbering scheme
PageCurrentLocal. page - PageCurrentLocal.<page numbering scheme>, e.g. PageCurrentLocal.Roman,
  numbering scheme
```

for all page numbering schemes, even those not supported by the current original `\pagenumbering` (1994/05/19 v1.1a LaTeX Kernel File w ltpageno.dtx 52 Page Numbering), which is defined as

```
\countdef\c@page=0 \c@page=1
\def\cl@page{}
\def\pagenumbering#1{%
  \global\c@page \@ne \gdef\thepage{\csname @#1\endcsname
    \c@page}}
```

```
1202 \newcommand{\pagesLTS@ifcounter}[1]{%
1203   \@ifundefined{c@#1}{\newcounter{#1}}{\relax}%
1204 }
1205
```

`\lastpages` We provide a command to give the number of pages in a sector of a split page numbering scheme (see page 10, `pagesLTS.<page numbering scheme>.<number>.local.cnt`):

```
1206 \newcommand{\lastpages}[2]{%
1207   \pagesLTS@ifcounter{pagesLTS.#1.#2.local.cnt}%
1208   \arabic{pagesLTS.#1.#2.local.cnt}%
1209 }
1210
```

`\pagesLTS@writelabel` At last defining the writing of a label:

```
1211 \newcommand{\pagesLTS@writelabel}[1]{%
1212   \addtocounter{page}{+1}%
```

`\addtocounter{page}{+1}` because `\pagesLTS@putlabel` includes an `\addtocounter{page}{-1}`, which is not necessary here.

Into the `.aux` file something like

```
\newlabel{pagesLTS.Roman}{{}{VIII}}{page.VIII}{{}}
```

is written, thus `\lastpageref{pagesLTS.Roman}` prints VIII and links to `page.VIII`.

```
1213   \pagesLTS@putlabel{pagesLTS.#1}{\thepage}
1214   \addtocounter{page}{-1}%
1215   \ifx\pagesLTS@pnc\pagesLTS@zero%
1216     \relax%
```

i.e. if the current page numbering scheme is “0”, i.e. before the first `\pagenumbering{...}` command, do nothing,

```
1217   \else%
1218     \addtocounter{page}{+1}%
1219     \pagesLTS@putlabel{pagesLTS.#1.local}{\theCurrentPageLocal}
```

otherwise write into the `.aux` file something like

```
\newlabel{pagesLTS.arabic.local}{{}{5}}{page.8}{{}},
```

thus `\lastpageref{pagesLTS.arabic.local}` prints 5 and links to `page.8`. Here (and in the example file) it is not “print 8 and link to `page.8`”, because `\addtocounter{page}{3}` has been used, thus the page with “number” (name) 8 is the **fifth** (= 8 – 3) page.

```
1220   \addtocounter{page}{-1}%
1221   \fi%
1222 }
1223
```

`\erroralphalph` `\erroralphalph` extends the “numbers” of counters to zero and negative values for representations usually not supporting this:

`\alphalph`, `\AlphAlph`, and `\fnsymbolmult` of the `alphalph` package.

`\alph`, `\Alph`, and `\fnsymbol` would not support “numbers” below one.

`\arabic` already supports negative numbers and zero.

`\roman` and `\Roman` support neither negative numbers nor zero, but are expanded in this package (`\xroman` and `\XRoman`), see page 44.

```
1224
1225 %% The following code is from Heiko Oberdiek [2010/04/18], %%
1226 %% expanding his alphalph package [2010/04/18] v2.3. (Thanks!) %%
1227 \newcommand*{\erroralphalph}[2]{%
1228   \ifnum\value{#2}>0 %
1229     #1{\value{#2}}%
1230   \else
1231     \ifnum\value{#2}<0 %
1232       -#1{\expandafter\@gobble\the\value{#2}}%
1233     \else
1234       0%
```

```

1235 \fi
1236 \fi
1237 }
1238 %% End of code from Heiko Oberdiek %%
1239 %% Check and Error/Warning messages have been moved to %%
1240 %% \EveryShipout, because messages inside e. g. the \pageref %%
1241 %% command can cause trouble. %%
1242

```

`\expandPagenumbering` Here the `\erroralphalph` command is called with the appropriate arguments for each page numbering scheme.

```

1243
1244 \newcommand{\expandPagenumbering}[1]{%
1245 \let\Origthepage\thepage%
1246 \def\pagesLTS@tmpC{arabic}%
1247 \ifx\pagesLTS@pnc\pagesLTS@tmpC%
1248 \relax%

```

`\arabic` already supports negative numbers and zero ($-\text{MAX} \dots \text{MAX}$, where $\text{MAX} = 2\,147\,483\,647$).

```

1249 \else%
1250 \def\pagesLTS@tmpC{roman}%
1251 \ifx\pagesLTS@pnc\pagesLTS@tmpC%
1252 \ifpagesLTS@romanMult%

```

`\erroralphalph{\roman}{page}` cannot be used, because `-\roman{\expandafter\@gobble\the\value{page}}` does not work. If option `romanMult` is not false, `\xroman` (see page 44) expands the usable roman page numbers to values below 1 (i, I, respectively), see subsection 2.1.3.

```

1253 \renewcommand*{\thepage}{\xroman{page}}%
1254 \fi%
1255 \else%
1256 \def\pagesLTS@tmpC{Roman}%
1257 \ifx\pagesLTS@pnc\pagesLTS@tmpC%
1258 \ifpagesLTS@RomanMulti%

```

The same for `\Roman` page numbering, expanded by `\XRoman` (see page 44).

```

1259 \renewcommand*{\thepage}{\XRoman{page}}%
1260 \fi%
1261 \else%
1262 \ifx\pagesLTS@pnc\pagesLTS@alph%

```

`\alph` and `\Alph` page numberings are expanded to negative and zero values, and to values greater than “z” or “Z” with the `alphalph` package. – If `\pagesLTS@alphMult` was zero, nothing is done.

```

1263 \ifx\pagesLTS@alphMult\pagesLTS@ab%
1264 \renewcommand*{\thepage}{\erroralphalph{\alphalph}{page}}%
1265 \else \ifx\pagesLTS@alphMult\pagesLTS@bb%
1266 \renewcommand*{\thepage}{\erroralphalph{\alphMult}{page}}%
1267 \fi%

```

```

1268         \fi%
1269     \else%
1270         \ifx\pagesLTS@pnc\pagesLTS@Alph%
1271             \ifx\pagesLTS@AlphMulti\pagesLTS@ABi%
1272                 \renewcommand*{\thepage}{\erroralphalph{\AlphAlph}{page}}%
1273             \else \ifx\pagesLTS@AlphMulti\pagesLTS@BBi%
1274                 \renewcommand*{\thepage}{\erroralphalph{\AlphMult}{page}}%
1275             \fi%
1276         \fi%
1277     \else%
1278         \ifx\pagesLTS@pnc\pagesLTS@fns%

```

Same for \fnsymbol page numbers.

```

1279         \ifpagesLTS@fnsymbolmult%
1280             \renewcommand*{\thepage}{\erroralphalph{\fnsymbolmult}{page}}%
1281         \fi%
1282     \else%

```

If the used page numbering scheme has not been recognized by the `pagesLTS` package so far, we can do nothing, and problems might result.

```

1283         \PackageError{pagesLTS}{unknown page numbering scheme}{%
1284             The pagesLTS package encountered the unknown\MessageBreak%
1285             page numbering scheme\MessageBreak%
1286             ‘#1’. \MessageBreak%
1287             If this is no typing mistake, it might work\MessageBreak%
1288             - or it might not work.\MessageBreak%
1289             \@ehc%
1290         }
1291     \fi%
1292 \fi%
1293 \fi%
1294 \fi%
1295 \fi%
1296 \fi%
1297 \let\pagesLTS@tmpC\undefined%
1298 }
1299

```


`\pagenumbering` Now for the **new** version of the `\pagenumbering` command:

```
1300 \renewcommand{\pagenumbering}[1]{%
```

If the current page numbering scheme, `\pagesLTS@pnc`, and the requested page numbering scheme, **#1**, is the same one, nothing is done, otherwise the real action begins.

```
1301 \edef\pagesLTS@tmpA{#1}%
1302 \ifx\pagesLTS@pnc\pagesLTS@tmpA%
1303 \relax%
1304 \else%
```

The next code is executed, when we are at a page after the first one. This distinction is done for two reasons: On the one hand, `\pagenumbering` could be called *before* `\begin{document}` (where the current page should not be greater than one), and on the other hand we go one page back to aim all references to that page. Obviously at the first page there is no going backward.

```
1305 \ifnum \value{CurrentPage}>1%
1306 \addtocounter{page}{-1}%
1307 \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{-1}%
```

For the case that the page numbering scheme is or will be splitted, like e. g. the Roman one in the `pagesLTS-example.tex`, a counter like `pagesLTS.Roman.1.local.count` (or `pagesLTS.Roman.2.local.count`, `pagesLTS.Roman.3.local.count`,...) is introduced and set to the number of the local page.

```
1308 \newcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}%
1309 \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1310 \value{pagesLTS.current.local.\pagesLTS@pnc}}%
```

If the page numbering scheme is `fnsymbol`, and if it *was* used before, from said counter the number of pages of the preceding uses of the same page numbering scheme, `pagesLTS.\pagesLTS@pnc.done`, is subtracted (same as for the other schemes, see below). Instead of introducing a new counter (which can be problematic, when the number of available counters is limited), we borrow the `pagesLTS.pnc.0` counter, i. e. we save its value to `\pagesLTS@tmpa`, (ab)use the counter, and then set it back to its former value as saved in `\pagesLTS@tmpa`.

```
1311 \ifx\pagesLTS@pnc\pagesLTS@fns%
1312 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%
1313 \mathchardef\pagesLTS@tmpa=\arabic{pagesLTS.pnc.0}%
1314 \setcounter{pagesLTS.pnc.0}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%
1315 \addtocounter{pagesLTS.pnc.0}{-1}%
1316 \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1317 -\value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.0}.local.count}}%
1318 \setcounter{pagesLTS.pnc.0}{\pagesLTS@tmpa}%
1319 \fi%
```

If the page numbering scheme is *not* `fnsymbol`, a numbered label is written:

```
1320 \else%
1321 \pagesLTS@writelabel{\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}}%
```

If the page numbering scheme was *not* used before,

```
1322 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}<2%
```

an unnumbered label is also written:

```
1323      \pagesLTS@writelabel{\pagesLTS@pnc}%
```

If the page numbering scheme *was* used before, from said counter the number of pages of the preceding uses of the same page numbering scheme, `pagesLTS.\pagesLTS@pnc.done`, is subtracted. Instead of introducing a new counter (which can be problematic, when the number of available counters is limited), we again borrow the `pagesLTS.pnc.0` counter (see above).

```
1324      \else%
1325        \mathchardef\pagesLTS@tmpa=\arabic{pagesLTS.pnc.0}%
1326        \setcounter{pagesLTS.pnc.0}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%
1327        \addtocounter{pagesLTS.pnc.0}{-1}%
1328        \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.done}%
1329        \addtocounter{pagesLTS.\pagesLTS@pnc.done}{%
1330          \value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.0}.local.count}}%
1331        \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1332          -\value{pagesLTS.\pagesLTS@pnc.done}}%
1333        \setcounter{pagesLTS.pnc.0}{\pagesLTS@tmpa}%
1334      \fi%
```

The values are written to the `.aux` file (if writing is allowed: `\if@files`), because they must be available at the beginning of the document:

```
1335      \if@files%
1336        \immediate\write\@auxout{\string
1337          \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}}%
1338      \fi%
1339      \edef\pagesLTS@tmpB{\arabic{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}}%
1340      \if@files%
1341        \immediate\write\@auxout{\string
1342          \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}{\pagesLTS@tmpB}}%
1343      \fi%
1344    \fi%
```

For further code for the case of `fnsymbol` please see below (`\lastpagereftxt`, page 52). The last page number is saved, in case the same page numbering scheme is continued later.

```
1345      \pagesLTS@ifcounter{pagesLTS.double.\pagesLTS@pnc}%
1346      \setcounter{pagesLTS.double.\pagesLTS@pnc}{\value{page}}%
```

We went back one page, so we must go forward again:

```
1347      \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{+1}%
1348      \addtocounter{page}{+1}%
```

The page numbering scheme `\pagesLTS@pnc` is now set to the new one, given by the user as argument with the `\pagenumbering{...}` command:

```
1349      \global\edef\pagesLTS@pnc{#1}%
```

The new page numbering scheme is now started for real:

```
1350      \OrigPagenumbering{#1}%
```

If a page numbering scheme not known by the original `\pagenumbering{...}` command is used, an error will arise here - but maybe without error message.

If page numbering scheme `\alph`, `\Alph`, or `\fnsymbol` is used, `pagesLTS` extends the page numbers according to the given options, using the `alphalph` package. `\arabic` does not need any expansion. `\roman` and `\Roman` at least receive a definition for zero.

```
1351 \expandPagenumbering{#1}
```

Counters like `pagesLTS.pnc.Roman` are introduced:

```
1352 \pagesLTS@ifcounter{pagesLTS.pnc.\pagesLTS@pnc}%
```

The saved number of times this page numbering scheme was used is increased by one:

```
1353 \addtocounter{pagesLTS.pnc.\pagesLTS@pnc}{1}%
```

Now defining the counter `pagesLTS.double.\pagesLTS@pnc`, if it did not exist already, adding 1, because this is the first page of it (or another one, if the scheme is continued):

```
1354 \pagesLTS@ifcounter{pagesLTS.double.\pagesLTS@pnc}%
```

```
1355 \addtocounter{pagesLTS.double.\pagesLTS@pnc}{1}%
```

The page number is continued, if the option `pagecontinue=false` is **not** set, otherwise it is reset to one. Note that neither the local nor the current counter are reset, as they contain the real *values* and not the *names* of the pages.

```
1356 \ifpagesLTS@pagecontinue%
```

```
1357 \setcounter{page}{\value{pagesLTS.double.\pagesLTS@pnc}}%
```

```
1358 \else%
```

```
1359 \setcounter{page}{1}%
```

```
1360 \fi%
```

If it does not exist already, the counter `pagesLTS.current.local.\pagesLTS@pnc` (e.g. `pagesLTS.current.local.Roman`) is created.

```
1361 \pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc}%
```

If `pagesLTS.double.\pagesLTS@pnc` of the current page numbering scheme is equal to one, this is the first page of this page numbering scheme. Then `pagesLTS.current.local.\pagesLTS@pnc` (which was zero) is set to one.

```
1362 \ifnum \value{pagesLTS.double.\pagesLTS@pnc}=1%
```

```
1363 \setcounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
```

```
1364 \fi%
```

Otherwise, i.e. if `\value{CurrentPage}` is not `>1`, i.e. before the first page has shipped out:

```
1365 \else%
```

```
1366 %% before the first page has shipped out
```

The current page numbering scheme is defined by the argument of `\pagenumbering{...}`, which the user gave:

```
1367 \global\edef\pagesLTS@pnc{#1}%
```

and the page numbering scheme set by the original page numbering command (1994/05/19 v1.1a LaTeX Kernel File w ltpageno.dtx 52 Page Numbering), which resets the page number to one, but at the first page continuation does not make sense). Well, nearly the original page numbering command: `\OrigPagenumbering{\pagesLTS@pnc}` does not work, so we “expand” the `\OrigPagenumbering` command:

```
1368 \countdef\c@page=0 \c@page=1
1369 \def\cl@page{}
1370 \global\c@page \@ne
1371 \global\def\thepage{\csname \expandafter @\pagesLTS@pnc \endcsname \c@page}%
```

If a page numbering scheme is used, which is not known by L^AT_EX, an error might arise here - but maybe without error message.

If page numbering scheme `\alph`, `\Alph`, or `\fnsymbol` is used, `pagesLTS` extends the page numbers according to the given options, using the `alphalph` package. `\arabic` does not need any expansion. `\roman` and `\Roman` at least receive a definition for zero.

```
1372 \expandPagenumbering{#1}
```

We are at the first page, so the page counters are set to one:

```
1373 \pagesLTS@ifcounter{pagesLTS.pnc.\pagesLTS@pnc}%
1374 \setcounter{pagesLTS.pnc.\pagesLTS@pnc}{1}%
1375 \pagesLTS@ifcounter{pagesLTS.double.\pagesLTS@pnc}%
1376 \setcounter{pagesLTS.double.\pagesLTS@pnc}{1}%
1377 \pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc}%
1378 \setcounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
1379 \fi%
```

Whether `\pagenumbering{...}` is called in the preamble, `\AtBeginDocument`, right after `\begin{document}`, or somewhere in the document, we want to remember *whether* it was called at all:

```
1380 \gdef\pagesLTS@called{1}%
1381 \fi%
```

We do not need the temporary definitions any more.

```
1382 \let\pagesLTS@tmpA\undefined%
1383 \let\pagesLTS@tmpB\undefined%
1384 }
1385
```

`\lastpagereftxt` When `\lastpageref` is used somewhere inside the `txt` (text), i.e. not at the last page, it is defined as `\lastpagereftxt`. When the page numbering scheme is `fnsymbol`, and the `hyperref` package has been loaded, a `hyperref` instead of a label is used for the reference to `pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}`.

```
1386 \newcommand{\lastpagereftxt}[1]{%
1387 \def\pagesLTS@tmpA{#1}%
1388 \def\pagesLTS@tmpB{pagesLTS.fnsymbol.local}%
1389 \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1390 \ifx\pagesLTS@hyper\pagesLTS@one%
1391 \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}%
1392 {\arabic{pagesLTS.fnsymbol.local}}%
```

When the page numbering scheme is `fnsymbol`, but the `hyperref` package has *not* been loaded, just the arabic number of the `pagesLTS.fnsymbol.local` counter is given (because there will be no hyperlink anyway).

```
1393   \else \arabic{pagesLTS.fnsymbol.local}%
1394   \fi%
```

Otherwise just the common `\pageref` is applied:

```
1395   \else%
1396     \pageref{#1}%
1397   \fi%
```

We do not need the temporary definitions any more.

```
1398   \let\pagesLTS@tmpA\undefined%
1399   \let\pagesLTS@tmpB\undefined%
1400   }
1401
```

`\lastpagerefend` When the `hyperref` package is used and the page numbering scheme of the last page is `fnsymbol`, `\lastpageref` is defined as `\lastpagerefend`. Hyperrefs instead of labels are used for the reference to `fnsymbol` pages (including the last one).

```
1402 \newcommand{\lastpagerefend}[1]{%
1403   \def\pagesLTS@tmpA{#1}%
1404   \def\pagesLTS@tmpB{pagesLTS.fnsymbol.local}%
1405   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1406     \ifx\pagesLTS@hyper\pagesLTS@one%
1407       \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}{%
1408         {\arabic{pagesLTS.fnsymbol.local}}}%
1409     \else \arabic{pagesLTS.fnsymbol.local}%
1410     \fi%
1411   \else%
1412     \def\pagesLTS@tmpB{pagesLTS.fnsymbol}%
1413     \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1414       \ifx\pagesLTS@hyper\pagesLTS@one%
1415         \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}{%
1416           {\pagesLTS.lastpage}}%
1417       \else \pageref{pagesLTS.fnsymbol}%
1418       \fi%
1419     \else%
1420       \def\pagesLTS@tmpB{LastPage}%
1421       \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1422         \ifx\pagesLTS@hyper\pagesLTS@one%
1423           \href{\#pagesLTS.fnsymbol.local.\pagesLTS@eso}%
1424             {\pagesLTS.lastpage}%
1425         \else \pageref{LastPage}%
1426         \fi%
1427       \else%
1428         \def\pagesLTS@tmpB{VeryLastPage}%
1429         \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
```

```

1430 \ifx\pagesLTS@hyper\pagesLTS@one%
1431 \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}%
1432 {\pagesLTS.lastpage}%
1433 \else \pageref{VeryLastPage}%
1434 \fi%
1435 \else%
1436 \def\pagesLTS@tmpB{LastPages}%
1437 \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1438 \ifx\pagesLTS@hyper\pagesLTS@one%
1439 \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}%
1440 {\arabic{pagesLTS.pagenr}}%
1441 \else \pageref{LastPages}%
1442 \fi%
1443 \else%
1444 \pageref{#1}%
1445 \fi%
1446 \fi%
1447 \fi%
1448 \fi%
1449 \fi%

```

We do not need the temporary definitions any more.

```

1450 \let\pagesLTS@tmpA\undefined%
1451 \let\pagesLTS@tmpB\undefined%
1452 }
1453

```

esLTS@Prelim@EveryShipout Because we cannot make references to pages with fnsymbol page “numbers” manually with hyperref, we use \phantomsections and refer to one of those. But because we do not know how many \phantomsections and \section*s are introduced by the user (or other packages; cf. L^AT_EX bug 2298: knowing level of section*, <http://www.latex-project.org/cgi-bin/ltxbugs2html?category=LaTeX&responsible=anyone&state=open&keyword=&pr=latex%2F2298&search=>), we cannot refer to the last one as we did with the pages.

```

1454 \newcommand{\@pagesLTS@Prelim@EveryShipout}{%
1455 %% The following code is from the prelim2e package          %%
1456 %% [2009/05/29 v1.3] by Martin Schr\{"o\}der (Thanks!):    %%
1457 \bgroup
1458 \dimen\z@=\wd\@cclv
1459 \dimen\@ne=\ht\@cclv
1460 \dimen\tw@=\dp\@cclv
1461 \dimen\thr@@=\dimen1
1462 \advance\dimen\thr@@ by \dimen\tw@
1463 \global\setbox\@cclv\vbox to \dimen\thr@@{%
1464 \hb@xt@\dimen\z@{%
1465 \box\@cclv%
1466 \hss%
1467 }%

```

```

1468      \vbox to \z@{%
1469      \hb@xt@\dimen\z@{%
1470      \let\protect\relax
1471 %% Code not from prelim2e package:

```

Therefore each page with fnsymbol page “number” receives a `\phantomsection` and a label, which includes a number increased by one for each page. This is done for `pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.cont}` as well as `pagesLTS.fnsymbol`, `pagesLTS.\pagesLTS@pnc`, and `pagesLTS.\pagesLTS@pnc.local`.

In case an older label already existed, it is overwritten by an `\overridelabel` command.

```

1472      \ifx\pagesLTS@pnc\pagesLTS@fns%
1473      \addtocounter{pagesLTS.fnsymbol.cont}{1}%
1474      \ifx\pagesLTS@hyper\pagesLTS@one%
1475      \phantomsection%
1476      \hypertarget{pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.cont}}{}%
1477      \fi%
1478      \ifnum \pagesLTS@esov=\pagesLTS@zero%
1479      \label{pagesLTS.fnsymbol}%
1480      \else%
1481      \overridelabel{pagesLTS.fnsymbol}%
1482      \fi%
1483    \else%
1484      \ifx\pagesLTS@hyper\pagesLTS@one%
1485      \phantomsection%
1486      \fi%
1487      \if@files%
1488      \overridelabel{pagesLTS.\pagesLTS@pnc}%

```

The `undolabl` package has been updated and now uses `\undonewlabel` with only one argument.

```

1489      \def\pagesLTS@uv{new}%
1490      \ifx\pagesLTS@undolable\pagesLTS@uv%
1491      \immediate\write\@auxout{\string
1492      \undonewlabel{pagesLTS.\pagesLTS@pnc.local}}}%
1493    \else%
1494      \def\pagesLTS@uv{old}%
1495      \ifx\pagesLTS@undolable\pagesLTS@uv%
1496      \immediate\write\@auxout{\string
1497      \undonewlabel{pagesLTS.\pagesLTS@pnc.local}{\on@line}}}%
1498    \else%
1499      \relax% Error: no undolabl package at all, message already given above
1500    \fi%
1501  \fi%
1502 \fi%
1503 \addtocounter{page}{+1}%
1504 \pagesLTS@putlabel{pagesLTS.\pagesLTS@pnc.local}{\theCurrentPageLocal}%
1505 \addtocounter{page}{-1}%
1506 \fi%

```

```

1507 %% Code from prelim2e package again: %%
1508     }%
1509     \vss%
1510     }%
1511     \vss%
1512     }%
1513     \wd\@cclv=\dimen\z@
1514     \ht\@cclv=\dimen\@ne
1515     \dp\@cclv=\dimen\tw@
1516     \egroup
1517 %% End of code from the prelim2e package. %%
1518 }
1519

```

`\EveryShipout` At the end of each shipout, the following commands are executed:

```

1520 \EveryShipout{%
1521     \ifnum\value{page}>0%
1522         \relax%
1523     \else
1524         \ifnum\value{page}=0%
1525             \PackageWarning{pagesLTS}{%
1526                 Counter ‘page’ is zero!\MessageBreak%
1527                 If the page numbering scheme is not arabic\MessageBreak%
1528                 and further not extended\MessageBreak%
1529                 (see Page counter overflow in the pagesLTS\MessageBreak%
1530                 documentation), without other measures\MessageBreak%
1531                 this will lead to a counter overflow.\MessageBreak%
1532             }
1533         \else%
1534             \ifnum\value{page}<0%
1535                 \PackageWarning{pagesLTS}{%
1536                     Counter ‘page’ is negative: ‘\the\value{page}’!\MessageBreak%
1537                     If the page numbering scheme is not arabic\MessageBreak%
1538                     and further not extended\MessageBreak%
1539                     (see Page counter overflow in the pagesLTS\MessageBreak%
1540                     documentation), without other measures\MessageBreak%
1541                     this will lead to a counter overflow.\MessageBreak%
1542                 }
1543             \else%
1544                 \PackageError{pagesLTS}{%
1545                     Counter ‘page’ does not have a recognized value:\MessageBreak%
1546                     ‘\the\value{page}’\MessageBreak%
1547                     \@ehd \MessageBreak%
1548                 }
1549             \fi%
1550         \fi%

```


1551 \fi%

 If the `CurrentPage` is equal to one, this is the first shipout.

1552 \ifnum \value{CurrentPage}=1% This is the first shipout!

 \AtBeginDocument it is checked whether the `hyperref` package is loaded,

 \@ifpackageloaded{hyperref}{\gdef\pagesLTS@hyper{1}}{}.

 \@ifpackageloaded cannot be used later than `\AtBeginDocument`.

 Sebastian Bank found a case, when this check is not sufficient. Using a class with

 \usepackage{lastpage}

 \AtBeginDocument{\usepackage{hyperref}}

leads to failed detection of the `hyperref` package, because `\AtBeginDocument` *first* the check for `hyperref` is performed, and *then* `hyperref` is loaded. As mentioned above, `\@ifpackageloaded` cannot be used later, so here we do not check for the `hyperref` package again, but for its `\Hy@Warning` command. In version 1.1h of the `pagesLTS` package, it was checked for the `\hyperref` command, but as it turned out, `tcilatex` is defining that. If some other package or user is defining `\Hy@Warning`, `pagesLTS` will falsely assume, that `hyperref` has been loaded, but by my humble opinion, defining `\Hy@Warning` does not make sense and is bad style (except definition by the `hyperref` package itself, of course).

1553 \@ifundefined{Hy@Warning}{% hyperref not loaded

1554 }% hyperref loaded

1555 \gdef\pagesLTS@hyper{1}%

1556 }%

 We check whether some page numbering scheme was defined by `\pagenumbering{...}` (as it should be!):

1557 \ifx\pagesLTS@called\pagesLTS@zero

 If it was not defined (i.e. `\pagesLTS@called` is zero), the user is informed, that a `\pagenumbering{...}` is missing behind `\begin{document}`. Of course, it is possible that some package did some pages of output with `\AtBeginDocument`. In that case, one `\pagenumbering{...}` before `\begin{document}` and one `\pagenumbering{...}` (with the same argument, of course!) behind `\begin{document}` could help somewhat.

1558 \PackageError{pagesLTS}{pagenumbering missing}{\pagesLTS@messageNPN }%

 We save the current value of the page,

1559 \mathchardef\pagesLTS@tmpD=\arabic{page}%

 determine the current page numbering scheme,

1560 %% Code from Andres L{"o}h, Universiteit Utrecht (NL) %%

1561 \def\extract#1{\expandafter\extract@ #1\END}

1562 \def\extract@#1\csname @#2\endcsname#3\END{#2}

1563 \edef\pagesLTS@tmpQ{\extract\thepage}%

1564 %% End of code from Andres L{"o}h %%

1565 \let\pagesLTS@tmpP\pagesLTS@tmpQ%

 set the current page numbering scheme to 0 (because before the beginning of the document it should be 0),

1566 \def\pagesLTS@pnc{0}%

and then issue a `\pagenumbering` command with the determined page numbering scheme as argument:

```
1567 \pagenumbering{\pagesLTS@tmpP}%
```

This resets the page to one (if option `pagecontinue=false` was choosen), but because we do not start a new page numbering scheme here but manifest a page numbering scheme, which the user forgot to define, the page number should not have been reset to one. (This is the first page, but maybe the user wants it to have page number 2001?) Therefore we revert this here and set the page number to its value, which was saved before the `\pagenumbering` command.

```
1568 \setcounter{page}{\pagesLTS@tmpD}%
```

```
1569 \fi%
```

We are at the first page, so we put the label here.

```
1570 \pagesLTS@writelabel{0}%
```

```
1571 \fi%
```

If the current page numbering scheme `\pagesLTS@pnc` is `\pagesLTS@fns` (which is defined as `fnsymbol`), the label is set by `\@pagesLTS@Prelim@EveryShipout` (see just above), and `\pagesLTS@esov` is set to the (real) number (not the name) of this page numbering scheme, `\arabic{pagesLTS.fnsymbol.cont}`.

When no more pages with `fnsymbol` page “number” are shipped out, the value remains fixed and we have our reference to the last page of the `fnsymbol` page numbering range. (At least we will have that reference after some more work, see below).

```
1572 \ifx\pagesLTS@pnc\pagesLTS@fns%
```

```
1573 \@pagesLTS@Prelim@EveryShipout%
```

```
1574 \gdef\pagesLTS@esov{\arabic{pagesLTS.fnsymbol.cont}}%
```

When another page numbering scheme was reused (in the example file `Roman`), we also need to apply `\@pagesLTS@Prelim@EveryShipout`, because otherwise we would get multiply defined labels.

```
1575 \else%
```

```
1576 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%
```

```
1577 \@pagesLTS@Prelim@EveryShipout%
```

```
1578 \fi%
```

```
1579 \fi%
```

The `CurrentPage` as well as the `pagesLTS.current.local.\pagesLTS@pnc` are advanced by one (because one page was shipped out and the next is about to begin).

```
1580 \addtocounter{CurrentPage}{1}%
```

```
1581 \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
```

```
1582 }
```

```
1583
```

\pagesLTS@putlabelhyper

Here the labels are set, if the hyperref package was loaded. Simply using \label would not work, because labels wait for the output routines to work, and there may not be any more invocations of the output routines. To force the write out we need to do an \immediate write.

```
1584 \newcommand{\pagesLTS@putlabelhyper}[2]{%
1585   \ifHy@pageanchor \relax%
1586   \else%
```

If the hyperref package is used, but pageanchors are disabled, the hyperlinking will not work.

```
1587   \PackageError{pagesLTS}{hyperref option pageanchor disabled}{%
1588     The \string\lastpageref{#1} link doesn't work\MessageBreak%
1589     using hyperref with disabled option 'pageanchor'.\MessageBreak%
1590   }%
1591 \fi
```

If use of the .aux-file is allowed, the label for LastPage is written into that file, the page reference depending on the options, which where set for the hyperref package.

```
1592 %% The following code is from the hyperref package          %%
1593 %% [2010/04/17 v6.80x; newer versions are available]         %%
1594 %% by Heiko Oberdiek (Big Thanks!).                          %%
1595 \if@filesw
1596   \begingroup
1597     \let\@number\@firstofone
1598     \ifHy@pageanchor
1599       \ifHy@hypertextnames
1600         \ifHy@plainpages
1601           \def\Hy@temp{\arabic{page}}%
1602         \else
1603           \Hy@unicodedefalse
1604 %% Code not from hyperref package:                             %%
1605 %% The following lines are modified from the hyperref package. %%
1606 %% Without the modification, after the first shipout "PD1" is %%
1607 %% inserted each time |\pdfstringdef\Hy@temp{\thepage}| is    %%
1608 %% executed (if |fnsymbol| is not used).                      %%
1609           \ifnum \value{CurrentPage}=1%
1610             \ifx\pagesLTS@pnc\pagesLTS@fns%
1611               \pdfstringdef\Hy@temp{\thepage}%
1612             \else%
1613               \def\Hy@temp{\thepage}%
1614             \fi%
1615           \else%
1616             \pdfstringdef\Hy@temp{\thepage}%
1617           \fi%
1618 %% Code from hyperref package again:                            %%
1619         \fi
1620       \else
1621         \def\Hy@temp{\the\Hy@pagecounter}%
```

```

1622     \fi
1623     \fi
1624 %% End of code from the hyperref package.                %%
1625 %% (The following four lines are modified                 %%
1626 %% from the hyperref package.)                           %%
1627     \immediate\write\@auxout{\string
1628         \newlabel{#1}{{}{#2}}{\ifHy@pageanchor page.\Hy@temp\fi}{}}%
1629     \endgroup%
1630 \fi%
1631 }
1632

```

`\pagesLTS@putlabel` Since the page has been put out, we are on the page after that page. We therefore subtract one from the page counter.

```

1633 \newcommand{\pagesLTS@putlabel}[2]{%
1634     \addtocounter{page}{-1}%

```

If the hyperref package is used, the format of the labels is somewhat longer.

```

1635     \ifx\pagesLTS@hyper\pagesLTS@one%
1636         \pagesLTS@putlabelhyper{#1}{#2}%
1637     \else%

```

If the hyperref package is not used, there will be no hyperlinks, and the label is written in the way of the old `lastpage` package. But we must remember to undo the label first, if it already exists.

```

1638     \if@filesw%
1639         \ifnum \value{pagesLTS.pnc}.\pagesLTS@pnc<2%
1640             \immediate\write\@auxout{\string
1641                 \newlabel{#1}{{}{#2}}}%
1642         \else%
1643             \edef\pagesLTStmpA{#1}%
1644             \edef\pagesLTStmpB{pagesLTS.\pagesLTS@pnc.local}%
1645             \ifx\pagesLTStmpA\pagesLTStmpB%
1646                 \immediate\write\@auxout{\string
1647                     \undonewlabel{#1}}%
1648             \fi%
1649             \immediate\write\@auxout{\string
1650                 \newlabel{#1}{{}{#2}}}%
1651         \fi%
1652     \fi%
1653 \fi%

```

After the writeout we restore the page number again, since there might be other things still to be done.

```

1654     \addtocounter{page}{+1}%
1655 }
1656

```

`\pagesLTS@putlabels` `\pagesLTS@putlabels` is nearly identical to `\pagesLTS@putlabelV`:

```
1657 \newcommand{\pagesLTS@putlabels}{%
1658   \addtocounter{page}{-1}%
1659   \addtocounter{CurrentPage}{-1}%
1660   \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{-1}%
```

If `\pagenumbering{...}` has not been used, `\pagesLTS@pnc` is still zero (0, `\pagesLTS@zero`), and the according warning message is given.

```
1661   \ifx\pagesLTS@pnc\pagesLTS@zero%
1662     \PackageWarning{pagesLTS}{No page numbering scheme found:\MessageBreak%
1663       \pagesLTS@messageNPN }%
```

otherwise the numbered label is written, and if the page numbering scheme was not used before, the unnumbered label is written, too.

```
1664   \else%
1665     \pagesLTS@writelabel{\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}}%
1666     \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}<2%
1667       \ifx\pagesLTS@pnc\pagesLTS@fns%
1668         \relax%
1669       \else%
1670         \pagesLTS@writelabel{\pagesLTS@pnc}%
1671       \fi%
1672     \fi%
1673   \fi%
```

Before the label for the `LastPages` can be put, we must advance one page again, because `\pagesLTS@putlabel` itself goes back one page (and at its end forward again).

```
1674   \addtocounter{page}{+1}%
1675   \pagesLTS@putlabel{LastPages}{\theCurrentPage}
```

Here should follow a

`\addtocounter{page}{-1}`,

but we have to remember to increase the page counters again, which were decreased at the start of this `\pagesLTS@putlabels` command, and that would include

`\addtocounter{page}{+1}`,

therefore this two lines cancel each other and therefore just can be skipped. But the other counters have to be increased:

```
1676   \addtocounter{CurrentPage}{1}%
1677   \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
1678 }
1679
```

\AtBeginDocument \AtBeginDocument it is checked whether writing into an .aux-file is allowed. The pagesLTS package cannot be used without that!

```
1680 \AtBeginDocument{%
1681   \if@filesw \relax%
1682   \else%
1683     \PackageError{pagesLTS}{No auxiliary file allowed.}%
1684     {The pagesLTS package was not allowed to write to an .aux file.\MessageBreak%
1685     This package does not work without access to an .aux file.\MessageBreak%
1686     Press Ctrl+Z to exit.\MessageBreak%
1687   }%
```

Maybe even abortion of the compilation should be forced?

```
1688   % \endinput
1689 \fi%
```

It is checked whether the endfloat package is loaded, whether it is newer than March 1992 (i. e. at least April 1992 v2.0), in which case it is compatible with this pagesLTS package.

If it is even newer than 1995/10/10, it is the recent version (as of the time of last revision of this documentation: 1995/10/11 v2.4i).

```
1690 \@ifpackageloaded{endfloat}%
1691   {\@ifpackagelater{endfloat}{1992/03/31}% April 1992 v2.0
1692   {\@ifpackagelater{endfloat}{1995/10/10}% 1995/10/11 v2.4i
1693   \relax}%
```

If it is compatibel, but not the recent version, a warning is given:

```
1694   {\PackageWarningNoLine{pagesLTS}{Old endfloat package detected:\MessageBreak%
1695   There is a newer version of the endfloat package available.\MessageBreak%
1696   Please consider updating your version.\MessageBreak%
1697   The pagesLTS package might be incompatible with\MessageBreak%
1698   your current endfloat package.\MessageBreak%
1699   }%
1700 }
```

If it is so very old, that it is not compatible, an Error message is given:

```
1701   {\PackageError{pagesLTS}{Incompatible, very old endfloat package detected.}%
1702   {The very old version 2.0 (and earlier) of the\MessageBreak%
1703   endfloat package actually redefined the \ enddocument,\MessageBreak%
1704   and so interferred drastically with the LaTeX2e commands\MessageBreak%
1705   which make use of \ AtEndDocument.\MessageBreak%
1706   Newer versions of the endfloat package exists\MessageBreak%
1707   (at least: v2.4i as of 1995/10/11)\MessageBreak%
1708   in modern documentation form,\MessageBreak%
1709   which should be available from CTAN.\MessageBreak%
1710   Please update your endfloat package\MessageBreak%
1711   for use with the pagesLTS package.\MessageBreak %
1712   }%
1713   }%
1714   }%
1715   }{}}%
```

It is checked whether the old lastpage package was loaded.
(If it was loaded indeed, the \lastpage@putlabel is “killed”, see subsection 3.3.)

```

1716 \@ifpackageloaded{lastpage}%
1717   {\@ifpackagelater{lastpage}{2010/07/28}% 2010/07/29 v1.2a
1718     {\@ifpackagelater{lastpage}{2010/08/24}% 2010/08/25 v1.2d
1719       {\PackageWarning{pagesLTS}{lastpage package detected.\MessageBreak%
1720         With pagesLTS package in use, lastpage has no function.\MessageBreak%
1721         Just remove the lastpage package from your document.\MessageBreak%
1722         }%
1723       }{%
1724         \PackageWarning{pagesLTS}{Old lastpage package detected.\MessageBreak%
1725         With pagesLTS package in use, lastpage has no function.\MessageBreak%
1726         Just remove the lastpage package from your document.\MessageBreak%
1727         At least update it!\MessageBreak%
1728         }%
1729       }%
1730     }{%
1731       \PackageWarning{pagesLTS}{Incompatible package lastpage detected:\MessageBreak%
1732       Package pagesLTS was loaded, but also an old\MessageBreak%
1733       version of the lastpage package.\MessageBreak%
1734       pagesLTS has all functionality of the lastpage\MessageBreak%
1735       package (and more), so just remove the lastpage\MessageBreak%
1736       package from your document.\MessageBreak%
1737       (At least update it!)\MessageBreak%
1738       pagesLTS will now ''kill'' the lastpage@putlabel\MessageBreak%
1739       command of the lastpage package.\MessageBreak%
1740     }%
1741     \gdef\lastpage@putlabel{\relax}%
1742   }%
1743 }{}%
```

Further it is checked whether the alphas package is loaded.

```

1744 \@ifpackageloaded{alphas}%
1745   {\PackageInfo{pagesLTS}{Package alphas detected.\MessageBreak%
1746     pagesLTS supports alphas. Congratulations!\MessageBreak%
1747   }%

```

Unfortunately, \@ifpackageloaded cannot be used any later (cf. L^AT_EX bug 2335, Synopsis: Proposal for \@ifpackageloaded, <http://www.latex-project.org/cgi-bin/ltxbugs2html?category=LaTeX&responsible=anyone&state=open&keyword=&pr=latex%2F2335&search=>), therefore the result must be saved:

```

1748 \global\def\pagesLTS@AlphaAlpha{1}%

```

The commands are defined accordingly.

```

1749 \newalphalph{\AlphaMult}[mult]{\@Alpha}{26}%
1750 \newalphalph{\alphaMult}[mult]{\@alpha}{26}%
1751 \newalphalph{\fnsymbolmult}[mult]{\@fnsymbol}{5}%

```

1752 }%

If the `alphalph` package is not detected, it is checked whether no options are choosen, which would require that package.

```
1753 {\ifx\pagesLTS@alphMult\pagesLTS@zero%
1754   \PackageWarning{pagesLTS}{\pagesLTS@messageaMz }%
1755   \else%
1756     \PackageError{pagesLTS}{Package alphalph not loaded}%
1757     {Package alphalph was not loaded, but package pagesLTS\MessageBreak%
1758       was called without option alphMult=0 (zero).\MessageBreak%
1759       Either load package alphalph,\MessageBreak%
1760       or give option alphMult=0 (zero) to the pagesLTS package.\MessageBreak%
1761     }%
1762   \fi%
1763   \ifx\pagesLTS@AlphMulti\pagesLTS@zero%
1764     \PackageWarning{pagesLTS}{\pagesLTS@messageAMiz }%
1765     \relax%
1766     \else%
1767       \PackageError{pagesLTS}{Package alphalph not loaded}%
1768       {Package alphalph was not loaded, but package pagesLTS\MessageBreak%
1769         was called without option AlphMulti=0 (zero).\MessageBreak%
1770         Either load package alphalph,\MessageBreak%
1771         or give option AlphMulti=0 (zero) to the pagesLTS package.\MessageBreak%
1772       }%
1773     \fi%
1774     \ifpagesLTS@fnsymbolmult%
1775       \PackageError{pagesLTS}{Package alphalph not loaded}%
1776       {Package alphalph was not loaded, but package pagesLTS\MessageBreak%
1777         was called without option fnsymbolmult=false.\MessageBreak%
1778         Either load package alphalph,\MessageBreak%
1779         or give option fnsymbolmult=false to the pagesLTS package.\MessageBreak%
1780       }%
1781     \else%
1782       \PackageWarning{pagesLTS}{\pagesLTS@messagefsmz }%
1783     \fi%
1784   }%
```

Further it is checked whether the `hyperref` package is loaded.

```
1785 \@ifpackageloaded{hyperref}%
1786   {\PackageInfo{pagesLTS}{Package hyperref detected.\MessageBreak%
1787     pagesLTS supports hyperref. Congratulations!\MessageBreak%
1788   }%
1789   \global\def\pagesLTS@hyper{1}%
```

and whether the `pdfpages` package is loaded:

```
1790   \@ifpackageloaded{pdfpages}%
1791     {\PackageWarning{pagesLTS}{Package pdfpages detected.\MessageBreak%
1792       Using hyperref with pdfpages can cause problems. See\MessageBreak%
```



```

1793      ftp://ftp.ctan.org/tex-archive/macros/latex/contrib/pax/\MessageBreak%
1794      for project pax (PDFAnnotExtractor).\MessageBreak%
1795      }%
1796      }{\relax}%

```

The undolabl package has been updated and now uses \undonewlabel with only one argument.

```

1797      \@ifpackagelater{undolabl}%
1798      {\@ifpackagelater{undolabl}{2010/07/14}% 2010/07/15 v1.0d
1799      {\gdef\pagesLTS@undolable{new}% not necessarily newest, but new
1800      \@ifpackagelater{undolabl}{2010/07/28}% 2010/07/29 v1.0f
1801      {% recent version as of the time of last revision of this package: OK
1802      }{% old, but not obsolete version
1803      \PackageWarningNoLine{pagesLTS}{Old version of undolabl package used.\MessageBreak%
1804      See ftp://ftp.ctan.org/tex-archive/macros/latex/contrib/undolabl/ \MessageBreak%
1805      for a new version.\MessageBreak%
1806      }%
1807      }
1808      }{\gdef\pagesLTS@undolable{old}%
1809      \PackageError{pagesLTS}{Obsolete version of undolabl package used.}%{%
1810      See ftp://ftp.ctan.org/tex-archive/macros/latex/contrib/undolabl/ \MessageBreak%
1811      for a new version.\MessageBreak%
1812      \@ehc%
1813      }%
1814      }
1815      }{\gdef\pagesLTS@undolable{none}%
1816      \PackageError{pagesLTS}{Package undolabl missing}%{%
1817      Package undolabl not found.\MessageBreak%
1818      The pagesLTS package needs the undolabl package.\MessageBreak%
1819      See e.g.\MessageBreak%
1820      ftp://ftp.ctan.org/tex-archive/macros/latex/contrib/undolabl/ \MessageBreak%
1821      \@ehd%
1822      }%
1823      }

```

Additionally a version check of the available hyperref package is performed and if need be a warning is issued:

```

1824      \@ifpackagelater{hyperref}{2010/06/17}{% 2010/06/18 v6.81g
1825      \relax}{%
1826      \PackageWarningNoLine{pagesLTS}{Old hyperref package detected:\MessageBreak%
1827      There is a newer version of the\MessageBreak%
1828      hyperref package available.\MessageBreak%
1829      Please consider updating your version.\MessageBreak%
1830      }%
1831      }%
1832      %% pagesLTS supports the use of the package hyperref by
1833      %% Heiko Oberdiek (hyperref version 2010/06/18 v6.81g).
1834      %% pagesLTS may work with earlier versions of this packages,
1835      %% but this was not tested.

```

```
1836 }%
```

If no hyperref package in use is detected, a warning is issued, too:

```
1837 {\PackageWarning{pagesLTS}{Package hyperref NOT detected.\MessageBreak%
1838   pagesLTS would support hyperref. The page references\MessageBreak%
1839   will NOT be hyperlinked!\MessageBreak }%
1840 }%
```

We want the rerun-hint (see below) to appear after e.g. the `listfiles`, and therefore append it (`\pagesLTS@rerunwarning`) to `\@dofilelist` (trick found in Harald Harders' `fnbreak` package, thanks!):

```
1841 \newcommand\pagesLTS@dofilelist{%
1842   \let\pagesLTS@dofilelist\@dofilelist%
1843   \def\@dofilelist{\pagesLTS@dofilelist\pagesLTS@rerunwarning}%
1844 }
1845
```

Initially, we define `\pagesLTS@rerunwarning` to be empty:

```
1846 \newcommand\pagesLTS@rerunwarning{%
1847   \let\pagesLTS@rerunwarning\relax%
1848
```

`\AtEndDocument` `\AtEndDocument` we put in a `\message` to show, in what order things (which were called) are done (see subsection 3.1).

```
1849 \AtEndDocument{%
1850   \message{AED: pagesLTS setting LastPage}%

```

After this we issue a `\clearpage` to put out all floats, which are still floatig, remember the page number (if `fnsymbol`), and after that we place the `LastPage` label.

```
1851 \clearpage%
1852 \ifx\pagesLTS@pnc\pagesLTS@fns%
1853   \def\pagesLTS@tmpA{\arabic{pagesLTS.fnsymbol.local}}%
1854   \ifnum \pagesLTS@eso=\pagesLTS@tmpA%
1855     \gdef\pagesLTS@rerun{0}%
1856   \else%
1857     \gdef\pagesLTS@rerun{1}%
1858   \fi%
1859   \if@files%
1860     \immediate\write\@auxout{\string
1861       \gdef\string\pagesLTS@eso{\pagesLTS@tmpA}}%
1862   \fi%
1863 \fi%
1864 \pagesLTS@putlabel{LastPage}{\thepage}%

```

We do not need the temporary definition any more.

```
1865 \let\pagesLTS@tmpA\undefined%
1866 }
1867
```

`\AfterLastShipout` `\AfterLastShipout` is a command from Heiko Oberdiek's `atveryend` package (see above).

```
1868 \AfterLastShipout{%
```

The number of pages with the `fnsymbol` page numbering scheme, `\pagesLTS@esov`, is saved via the `.aux` file:

```
1869   \if@files%
1870     \immediate\write\@auxout{\string
1871       \setcounter{pagesLTS.fnsymbol.local}{\pagesLTS@esov}}%
1872   \fi%
```

If the `hyperref` package is in use, and the page numbering scheme of the last page is `fnsymbol`, everything is quite more complicated. Therefore `\lastpageref` is switched from simple `\lastpagereftxt` to the more difficult `\lastpagerefend`.

```
1873   \ifx\pagesLTS@hyper\pagesLTS@one%
1874     \ifx\pagesLTS@pnc\pagesLTS@fns%
1875       \if@files%
1876         \immediate\write\@auxout{\string
1877           \gdef\string\lastpageref{\string\lastpagerefend}}%
1878       \fi%
1879     \fi%
1880   \fi%
```

At the call of a `\pagenumbering{...}` command, everything for a split page numbering scheme is organized. For the last page numbering scheme, there is no `\pagenumbering{...}` command at the end, so we need to handle this here:

```
1881   \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}%
1882   \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1883     \value{pagesLTS.current.local.\pagesLTS@pnc}}%
```

And we are one page after the last one (`\AfterLastShipout!`), so we go back one page. (We again borrow the `pagesLTS.pnc.0` counter for the computations instead of defining yet another one.)

```
1884   \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{-1}
1885   \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%
1886     \mathchardef\pagesLTS@tmpD=\arabic{pagesLTS.pnc.0}%
1887     \setcounter{pagesLTS.pnc.0}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%
1888     \addtocounter{pagesLTS.pnc.0}{-1}%
1889     \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1890       -\value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.0}.local.count}}%
1891     \setcounter{pagesLTS.pnc.0}{\pagesLTS@tmpD}%
1892   \fi%
1893   \if@files%
1894     \immediate\write\@auxout{\string
1895       \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}}%
1896     \edef\pagesLTS@tmpA{\arabic{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}}%
1897     \immediate\write\@auxout{\string
1898       \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}{\pagesLTS@tmpA}}%
1899     \let\pagesLTS@tmpA\undefined%
1900   \fi%
```

We need to save (via the .aux file) the page name `\thepage` and the page number `\arabic{CurrentPage}` of the last page, in case the last page has `fnsymbol` page numbering scheme.

```

1901 \addtocounter{page}{-1}%
1902 \edef\pagesLTS@tmpA{\thepage}%
1903 \if@files%
1904   \immediate\write\@auxout{\string
1905     \gdef\string\pagesLTS.lastpage{\pagesLTS@tmpA}}%
1906 \fi%
1907 \addtocounter{page}{+1}%
1908 \addtocounter{CurrentPage}{-1}%
1909 \def\pagesLTS@tmpB{\arabic{CurrentPage}}%
1910 \if@files%
1911   \immediate\write\@auxout{\string
1912     \setcounter{pagesLTS.pagenr}{\pagesLTS@tmpB}}%
1913 \fi%
1914 \addtocounter{CurrentPage}{+1}%

```

The `VeryLastPage` label is set here, and when `\lastpageref{VeryLastPage}` instead of `\lastpageref{LastPage}` is used, it should really point to the last page. `LastPage` and `VeryLastPage` should be identical, unless a package was active with output `\AtEndDocument` after the `pagesLTS` package.

```

1915 \message{AED: pagesLTS setting VeryLastPage via AfterLastShipout}%
1916 \pagesLTS@putlabel{VeryLastPage}{\thepage}%

```

The `LastPages` label is set here, and `\lastpageref{LastPages}` gives the total number of pages and points to the (very) last page.

```

1917 \message{AED: pagesLTS setting LastPages via AfterLastShipout}%
1918 \pagesLTS@putlabels%

```

We do not need the temporary definitions any more.

```

1919 \let\pagesLTS@tmpA\undefined%
1920 \let\pagesLTS@tmpB\undefined%
1921 }
1922

```

`\AtVeryEndDocument` `\AtVeryEndDocument{...}` is even later:

“The code is called after the .aux file is closed and read in again. It is the place for final checks, rerun hints, final messages.”

(`atveryend` package of Heiko Oberdiek, v1.5 as of 2010/03/24)

Here it is used for a rerun hint.

For example if the page numbering scheme of the last page of the `pagesLTS-example.tex` file is changed to `fnsymbol` and two runs of `pdfLATEX` are done, `pdfLATEX` will be happy and will not complain about changed labels. But indeed, a *third* run is necessary and indicated by the warning message below.

```

1923 \AtVeryEndDocument{%
1924   \ifx\pagesLTS@rerun\pagesLTS@one%
1925     \def\pagesLTS@rerunwarning{%
1926       \PackageWarningNoLine{pagesLTS}{Label(s) may have changed.\MessageBreak%

```

```
1927      Rerun to get cross-references right.\MessageBreak%
1928      }%
1929      }%
1930      \fi%
1931      }
1932
1933 </package>
```

7 Installation

7.1 Downloads

Everything should be available on **CTAN**: <ftp://ftp.ctan.org/tex-archive/>, but may need additional packages themselves.

pagesLTS.dtx For unpacking the **pagesLTS.dtx** file and constructing the documentation it is required:

- **T_EX**Format L^AT_EX 2_ε, 1994/06/01, v2_ε: **CTAN**:
- document class ltxdoc, 2007/11/11, v2.0u, **CTAN:macros/latex/base/ltxdoc.dtx**
- package holtxdoc, 2010/04/24, v0.19, **CTAN:macros/latex/contrib/oberdiek/holtxdoc.dtx**
- package hypdoc, 2010/03/26, v1.9, **CTAN:macros/latex/contrib/oberdiek/hypdoc.dtx**
- package geometry, 2010/07/13, v5.5, **CTAN:macros/latex/contrib/geometry/geometry.dtx**

pagesLTS.sty The **pagesLTS.sty** for L^AT_EX 2_ε (i.e. all documents using the **pagesLTS** package) requires:

- **T_EX**Format L^AT_EX 2_ε, 1994/06/01, v2_ε, **CTAN**:
- package atveryend, 2010/03/24, v1.5, **CTAN:macros/latex/contrib/oberdiek/atveryend.dtx**
- package everyshi, 2001/05/15, v3.00, **CTAN:macros/latex/contrib/ms/everyshi.dtx**
- package kvoptions, 2010/02/22, v3.7, **CTAN:macros/latex/contrib/oberdiek/kvoptions.dtx**
- package undolabl, 2010/07/29, v1.0f, **CTAN:macros/latex/contrib/undolabl/undolabl.dtx**

pagesLTS-example.tex The **pagesLTS-example.tex** requires the same files as all documents using the **pagesLTS** package, and additionally:

- class article, 2007/10/19, v1.4h, from classes.dtx: **CTAN:macros/latex/base/classes.dtx**
- package alphalph, 2010/04/18, v2.3, **CTAN:macros/latex/contrib/oberdiek/alphalph.dtx**
- package lipsum, 2005/01/26, v1.0, **CTAN:macros/latex/contrib/lipsum/lipsum.dtx**
- package showkeys, 2007/08/07, v3.15, **CTAN:macros/latex/required/tools/showkeys.dtx**
- package hyperref, 2010/06/18, v6.81g, **CTAN:macros/latex/contrib/hyperref.zip**
- package pagesLTS, 2010/08/25, v1.1i, **CTAN:macros/latex/contrib/pagesLTS/pagesLTS.dtx**
(Well, it is the example file for this package, and because you are reading the documentation for the **pagesLTS** package, it can be assumed that you already have some version of it – is it the current one?)

papermas The **papermas** package is not required, but requires itself the the **pagesLTS** package and can be considered as kind of add-on:

- package papermas, 2010/07/29, v1.0d, **CTAN:macros/latex/contrib/papermas/papermas.dtx**

endfloat	<p>The endfloat package is not required, but because the pagesLTS package is incompatible with very old versions of the endfloat package (see subsection 3.2), here the recent one is listed:</p> <ul style="list-style-type: none"> - package endfloat, 1995/10/11, v2.4i, CTAN:macros/latex/contrib/endfloat/endfloat.dtx
prelim2e	<p>The prelim2e package is not required either, but because Prelim@EveryShipout code was taken from that package, it is listed, too:</p> <ul style="list-style-type: none"> - package prelim2e, 2009/05/29, v1.3, CTAN:macros/latex/contrib/ms/prelim2e.dtx
fancyhdr nccfancyhdr	<p>Neither fancyhdr nor nccfancyhdr package is required (the lastpage package used its predecessor fancyheadings), but because they were mentioned, also they are listed here:</p> <ul style="list-style-type: none"> - package fancyhdr, 2005/03/22, v3.2, CTAN:macros/latex/contrib/fancyhdr.zip - package nccfancyhdr, 2004/12/07, v1.1, CTAN:macros/latex/contrib/ncctools/source/nccfancyhdr.dtx
fnbreak	<p>Harald Harders' fnbreak (footnote break warning) package is neither required nor used here, but because the trick to give rerun warnings <i>after</i> e.g. the \listfiles was taken from it, the package is listed here:</p> <ul style="list-style-type: none"> - package fnbreak, 2010/08/09, v1.20, CTAN:macros/latex/contrib/fnbreak.zip
countlto nofm totpages	<p>As possible alternatives in section 4 there are listed</p> <ul style="list-style-type: none"> - package countlto, 2009/05/24, v2.1, CTAN:macros/latex/contrib/ms/countlto.dtx
lastpage zref	<ul style="list-style-type: none"> - package nofm, 1991/02/25, v?., ftp://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty does not work with e.g. hyperref - package totpages, 2005/09/19, v2.00, CTAN:macros/latex/contrib/totpages/totpages.dtx - package lastpage, 1994/07/20, v0.1b, CTAN:macros/latex/contrib/lastpage/lastpage.dtx - package zref, 2010/05/01, v2.17, CTAN:macros/latex/contrib/oberdiek/zref.dtx
Oberdiek holtxdoc atveryend kvoptions alphalph zref	<p>All packages of Heiko Oberdiek's bundle 'oberdiek' (especially holtxdoc, atveryend, kvoptions, alphalph, zref) are also available in a TDS compliant ZIP archive: CTAN:install/macros/latex/contrib/oberdiek.tds.zip.</p> <p>Warning: holtxdoc, 2010/04/24 v0.19, requires the packages</p> <ul style="list-style-type: none"> - hypdoc, 2010/03/26, v1.9 - hyperref, 2010/03/30, v6.80u (latest: 2010/06/18, v6.81g) - pdftexcmds, 2010/04/01, v0.9 - ltxcmds, 2010/03/09, v1.4 (latest: 2010/04/26, v1.7) - hologo, 2010/04/24, v1.2

- array (latest: 2008/09/09, v2.4c)

(or more recent versions) and does neither work with nor check for earlier versions!

(It is probably best to download [CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#) and use this, because the packages in there should be both recent and compatible.)

Münch Packages of mine (alphabetically ordered):

hrefhide 2010/07/29, v1.0d, [CTAN:macros/latex/contrib/hrefhide/hrefhide.dtx](#) and
[CTAN:install/macros/latex/contrib/hrefhide.tds.zip](#)

That package allows to “hide” some (hyperlinked) text when printing the document while keeping the layout.

lastpage 2010/08/25, v1.2c, [CTAN:macros/latex/contrib/lastpage/lastpage.dtx](#) and
[CTAN:install/macros/latex/contrib/lastpage.tds.zip](#)

That package allows to refer to the (maybe not so) last page. *The package was originally invented by Jeffrey P. Goldberg.* The `pagesLTS` package is much more mighty, but needs more resources (e.g. new counters).

pagesLTS 2010/08/25, v1.1i, [CTAN:macros/latex/contrib/pagesLTS/pagesLTS.dtx](#) and
[CTAN:install/macros/latex/contrib/pagesLTS.tds.zip](#)

The package described in this very documentation:

This package allows to refer to the (very) last page, gives the total number of pages, references to special pages, facilitates the use of nearly any pagenumbers you like (e.g. negative `Roman` numbers or more than `Z` pages with `Alph` page numbering), and works even with `fnsymbol` page numbers.

papermas 2010/07/29, v1.0d, [CTAN:macros/latex/contrib/papermas/papermas.dtx](#) and
[CTAN:install/macros/latex/contrib/papermas.tds.zip](#)

That package allows to compute the number of sheets of paper needed to print a document as well as the mass of that printed version of the document. Further that package allows to compute “base to the power of exponent” inside \LaTeX .

undolabl 2010/07/29, v1.0f, [CTAN:macros/latex/contrib/undolabl/undolabl.dtx](#) and
[CTAN:install/macros/latex/contrib/undolabl.tds.zip](#)

That package allows to override existing labels, especially automatically generated ones. *The main code of that package was invented by Ulrich Diez (eu.angelion@web.de) and first published in the `news:comp.text.tex` newsgroup at Sun, 20 Apr 2008 16:39:26 +0200, with subject: Re: How to undefine/overwrite a label? (see e.g. <http://groups.google.de/group/comp.text.tex/msg/5ba8d4722e5cd326?dmode=source> as well as <http://groups.google.de/group/comp.text.tex/msg/af6cfe93917097da?dmode=source>).*

7.2 Package, unpacking TDS

Package. This package is available on **CTAN**: (when searching on CTAN, look for `pageslts`).

CTAN:macros/latex/contrib/pagesLTS/pagesLTS.dtx

The source file.

CTAN:macros/latex/contrib/pagesLTS/pagesLTS.ins

The installation file.

CTAN:macros/latex/contrib/pagesLTS/pagesLTS.drv

The driver to generate the documentation.

CTAN:macros/latex/contrib/pagesLTS/ltxdoc.cfg

The L^AT_EX documentation configuration file, also for generating the documentation.

CTAN:macros/latex/contrib/pagesLTS/pagesLTS.pdf

The documentation.

CTAN:macros/latex/contrib/pagesLTS/pagesLTS.sty

The `.sty` file.

CTAN:macros/latex/contrib/pagesLTS/pagesLTS-example.tex

The example file.

CTAN:macros/latex/contrib/pagesLTS/pagesLTS-example.pdf

The compiled example file, as it should look like.

CTAN:install/macros/latex/contrib/pageslts.tds.zip

Everything in TDS compliant, compiled format.

For required other packages, see the preceding subsection.

Unpacking. The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through plain T_EX:

```
tex pagesLTS.dtx
```

About generating the documentation see paragraph 7.4 below.

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

<code>pagesLTS.sty</code>	→ <code>tex/latex/muench/pagesLTS.sty</code>
<code>pagesLTS.pdf</code>	→ <code>doc/latex/muench/pagesLTS.pdf</code>
<code>pagesLTS-example.tex</code>	→ <code>doc/latex/muench/pagesLTS-example.tex</code>
<code>pagesLTS-example.pdf</code>	→ <code>doc/latex/muench/pagesLTS-example.pdf</code>
<code>pagesLTS.dtx</code>	→ <code>source/latex/muench/pagesLTS.dtx</code>

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

7.3 Refresh file name databases

If your T_EX distribution (t_EX, mikt_EX, ...) relies on file name databases, you must refresh these. For example, t_EX users run `texhash` or `mktexlsr`.

7.4 Some details for the interested

Unpacking with L^AT_EX. The `.dtx` chooses its action depending on the format:

plain T_EX: Run `docstrip` and extract the files.

L^AT_EX: Generate the documentation.

If you insist on using L^AT_EX for `docstrip` (really, `docstrip` does not need L^AT_EX), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{pagesLTS.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

Generating the documentation. You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put the following line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdfL^AT_EX:

```
pdflatex pagesLTS.dtx
makeindex -s gind.ist pagesLTS.idx
pdflatex pagesLTS.dtx
makeindex -s gind.ist pagesLTS.idx
pdflatex pagesLTS.dtx
```

7.5 Compiling the example

The example file, `pagesLTS-example.tex`, can be compiled via

```
latex pagesLTS-example.tex
```

or (recommended)

```
pdflatex pagesLTS-example.tex
```

and will need *at least* (!) three compiler runs to get all references right.

8 Acknowledgements

I (H.-Martin Münch) would like to thank Jeffrey P. Goldberg (jeffrey+news at goldmark dot org) for inventing the `lastpage` package. This package first started as a revision of the `lastpage` package, but it became obvious that a replacement was needed. Further I would like to thank Heiko Oberdiek (heiko dot oberdiek at googlemail dot com) for providing the `\erroralphalph` command as well as a lot (!) of useful packages (from which I also got everything I know about creating a file in `dtx` format, ok, say it: copying), Martin Schröder (martin at oneiros dot de) for his `prelim2e` package, from which I got the `Prelim@EveryShipout` code, Ulrich Diez (eu.angelion at web dot de) for his code for the `undolabl` package, which allows overwriting of labels, Andres Löh (andres at cs dot uu dot nl) for the code to determine the current page numbering scheme, and the `news:comp.text.tex` and `news:de.comp.text.tex` newsgroups for their help in all things `TEX`.

9 History

[1994/06/17, `lastpage`]

- `lastpage` v0.99a: First shot by Jeffrey P. Goldberg.

[1994/06/25, `lastpage`]

- `lastpage` v0.1b: Last version number created by Jeffrey P. Goldberg.

[1994/07/20, `lastpage`]

- `lastpage` v0.1b (again): Documentation updated by Jeffrey P. Goldberg.
The main source code of the `lastpage` package 1994/07/20 v0.1b was:

```
\NeedsTeXFormat{LaTeX2e}[1994/06/01]
\ProvidesPackage{lastpage}[1994/07/20 v0.1b
  LaTeX2e package for refs to last page number (JPG)]
\def\lastpage@putlabel{\addtocounter{page}{-1}%
  \immediate\write\@auxout{\string
    \newlabel{LastPage}{\the\thepage}}}%
\addtocounter{page}{1}}
\AtEndDocument{%
  \message{AED: lastpage setting LastPage}%
  \clearpage\lastpage@putlabel}%
\endinput
```

and then `hyperref` even redefines `\lastpage@putlabel`.

[2010/02/18, **lastpage**]

- **lastpage** v1.1: Proposed **LastPages** label by H.-Martin Münch on [news:comp.text.tex](http://groups.google.com/group/comp.text.tex/msg/4407493da9c747f0?dmode=source), see e.g. <http://groups.google.com/group/comp.text.tex/msg/4407493da9c747f0?dmode=source>; now available in this **pagesLTS** package.

[2010/05/15 **v1.0**]

- **pagesLTS** Complete rewriting of the package, so as to work with **more than one page numbering scheme**; using `\AtVeryEnd` for `VeryLastPage`; upgrade from `fancyheadings` to `fancyhdr` package, then removed the need for a `fancyhdr` package at all.
- Rewriting of the package, so as to work with the `fnsymbol` page numbering scheme (even on the last page).
- Introduction of `kvoptions` into this package.
- Check for incompatible `endfloat` package.
- `lastpage209.sty` for L^AT_EX209.
- Replacement of `\filedate`, `-version`, `-name`,... because of L^AT_EX bug 2705:
Synopsis: Possible problem with `\fileversion` and `\filedate`
<http://www.latex-project.org/cgi-bin/ltxbugs2html?category=LaTeX&responsible=anyone&state=anything&keyword=lastpage&pr=latex%2F2705&search=>
- `alphalph` support included.
- Page numbering extension `\erroralph` of Heiko Oberdiek included.
- (Page-) Numbering extension for `roman` and `Roman` numbers included.
- Incompatible, old `lastpage` package “killed”.
- Example `pagesLTS-example.tex`.
- Alternatives listing (section 4).
- Listing of T_EX sources (subsection 7.1).
- A lot (!) of details.
- Complete rewriting of the documentation.
- Everything in DTX framework.
- New package name: **pagesLTS** for Last, Total, and page numbering Schemes pages.

[2010/06/01 v1.1(a)]

- Abstract changed: Negative `roman` and `Roman` page numbers are now possible.
- Some references to other packages have been updated.
- Several typing mistakes have been corrected (and new ones have been included probably) - both in the `style` file as well as in this documentation.

[2010/06/03 v1.1b]

- Corrected a bug in `\XXRoman`, where `\roman` instead of `\Roman` had been used.
- New `papermas` package mentioned.
- Updated references to other packages.
- TDS locations updated.
- Several changes in the documentation and the Readme file.

[2010/06/24 v1.1c]

- `holtxdoc` warning in `drv` updated.
- Removed CRLF line endings from the `dtx` file.
- Corrected the location of the package at CTAN. (In this version TDS was still missing due to packaging error.)
- Corrected Message format in `pagesLTS.ins`.
- Updated references to other packages: `hyperref`, `undolabl`, and `papermas`.
- Added a list of my other packages.

[2010/07/15 v1.1d]

- Added the `\@ifclassloaded{revtex4}` code for `\lastpage@putlabel` (changed to `\pagesLTS@putlabelhyper`) from the `hyperref` package **as comment** - what is the meaning of that code?
- In the documentation added the explanation of the occurrence of multiply definitions of the `LastPage` label with `lastpage`, `pagesLTS`, `hyperref` package (in that order).
- Corrected the given location of the `pagesLTS.tds.zip` file at CTAN.
- Updated references to other packages: `hyperref` and `undolabl`.
- Updated to new version of `undolabl` package [2010/07/15] v1.0d, which uses `\undonewlabel` with only one instead of two arguments.
- Added a warning message, if `hyperref` and `pdfpages` are *both* used. (Should not `hyperref` give this warning?)
- The usual correction of typos and minor details in the documentation.

[2010/07/29 v1.1e]

- Removed `lastpage209.sty`, because it is now contained in the `lastpage.dtx` file, $v \geq 1.2a$.
- Removed the `\@ifclassloaded{revtex4}` code for `\lastpage@putlabel`.
- Handling of `lastpage` package adapted to updated version 1.2(a).
- There is a new version of the used `geometry` package: 2010/07/13, v5.5.
- Corrected error in `lastpage` code [1994/07/20 v0.1b] given in [9](#) History.
- Version handling for `undolabl` package updated.
- Included a `\Checksum`.
- Some minor details.

[2010/08/08 v1.1f]

- Version 1.1e had a bug: `AlphAlph` was replaced by `alphalph` (because that package is named like this), but this was done also in commands and definitions - now reverted.
- The recent version of the Adobe Reader is 9.3.3 (instead of 9.3.1).

[2010/08/12 v1.1g]

- Now the rerun warning is given *after* e.g. the `\listfiles`, increasing the chance of the user to read it (trick found in Harald Harders' `fnbreak` package, thanks!).

[2010/08/23 v1.1h]

- Renamed `\XXRoman` to `\XRoman`.
- Reduced the number of needed counters.
- Removed wrong `%` from the driver file.
- Changed the `\unit` definition (got rid of an old `\rm`).
- Without use of the `hyperref` package, labels of type `pagesLTS.<page numbering scheme>.local` became multiply defined. Now an `\undolabl` was inserted.
- Diverse details.

[2010/08/25 v1.1i]

- Bug fix: `tcilatex` defines the `\hyperref` command, therefore for `hyperref` package detection this had to be changed to `\Hy@Warning`.

When you find a mistake or have a suggestion for an improvement of this package, please send an e-mail to the maintainer, thanks!
(Please see BUG REPORTS in the README.)

Note: J and Y are not missing in the index, but no commands beginning with these letters have been used in this `pagesLTS` package.

10 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; plain numbers refer to the code lines where the entry is used.

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