

# 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.

Disclaimer for web links: The author is not responsible for any contents referred to in this work unless he has full knowledge of illegal contents. If any damage occurs by the use of information presented there, only the author of the respective pages might be liable, not the one who has referred to these pages.

Save per page about 200 ml water, 2 g CO<sub>2</sub> 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<sup>A</sup>T<sub>E</sub>X 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 9.3.1 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`<sup>1</sup> must be  $> 0$  and  $< 10$  and those printed in `alph`<sup>2</sup> and `Alph`<sup>3</sup> must be  $> 0$  and  $< 27$ . After page Z  $\text{\LaTeX}$  *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.
```

---

<sup>1</sup> \*, †, ‡, §, ¶, ||, \*\*, ††, ‡‡

<sup>2</sup> 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

<sup>3</sup> 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  $\text{\LaTeX}$  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 $\text{\LaTeX}$`  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  $\text{\TeX}$  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  $\mathrm{L}^{\mathrm{A}}\mathrm{T}_{\mathrm{E}}\mathrm{X} 2_{\varepsilon}$  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>	<p><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).</p>
<code>\theCurrentPageLocal</code>	<p><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></p>
<code>pagesLTS. page numbering scheme . number</code>	<p>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.&lt;page numbering scheme&gt;.&lt;number&gt;</code>, e.g. <code>\lastpageref{pagesLTS.Roman.1}</code>, where <code>&lt;number&gt;</code> is the occurrence of the page numbering scheme. For details please see page 10.</p>
<code>\lastpageref</code>	<p>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.</p>
<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{&lt;something&gt;}</code> (<code>&lt;something&gt;</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 June 3, 2010      page V (5) of VII + 35 = 42 pages”*

or

*“DRAFT June 3, 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 modified<sup>4</sup> 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 the `lastpage` before the `pagesLTS` before the `hyperref` [2010/04/17, v6.80x; probably an update will be issued] package results in multiply definitions of the `LastPage` label.

---

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

### 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  $\text{\LaTeX}$ , 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  $\text{\TeX}$  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 9.3.1 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 <sup>A</sup> T <sub>E</sub> 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.  $\epsilon$ -TeX), here is a list of some possible alternatives:

### lastpage209.sty

- If L<sup>A</sup>T<sub>E</sub>X 2.09 is still used, and if you are unable to switch to L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, the L<sup>A</sup>T<sub>E</sub>X 2.09 compatible lastpage209.sty of Jeffrey P. Goldberg (jeffrey+news at goldmark dot org) can be used, which is defined as follows:

(You can get it also by un-commenting the

```
%% \file{lastpage209.sty}{\from{pagesLTS.dtx}{lastpage209}}%
```

line in the pagesLTS.ins file and running

tex pagesLTS.ins.)

```
1      \langle*lastpage209\rangle
2      % FOR LaTeX 2.09 ONLY - FOR LaTeX 2e USE lastpage.sty OR pagesLTS.sty!
3      % This is lastpage209.sty by Jeffrey P. Goldberg (jeffrey+news at goldmark dot org).
4      \let\origenddocument=\enddocument
5      \def\enddocument{\clearpage
6        {\addtocounter{page}{-1}
7          \immediate\write\@mainaux
8            {\string\newlabel{LastPage}{\the\page}}}
9        \addtocounter{page}{+1}
10       \origenddocument%
11     }
12     \ranglelastpage209\rangle
```

(after Piet van Oostrum: Page layout in L<sup>A</sup>T<sub>E</sub>X, March 2, 2004, section 16; fancyhdr.pdf). Because \enddocument is redefined, similar problems as with the old version of the endfloat package (see subsection 3.2) will arise.

The lastpage209 style only provides the LastPage label - nothing else!

**If possible, update to L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>!**

### LastPage

- The LastPage package also provides the LastPage label (but not VeryLastPage or LastPages). If you only want this and have a very limited amount of T<sub>E</sub>X resources, you might want to use that package instead.

### 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<sup>A</sup>T<sub>E</sub>X, 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  $\varepsilon$ -T<sub>E</sub>X. `pagesLTS` does not require  $\varepsilon$ -T<sub>E</sub>X, but if you already have  $\varepsilon$ -T<sub>E</sub>X, 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

```

13 \*example)
14 \documentclass[british]{article}
15 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
16 \usepackage[alphalph]{2010/04/18}% v2.3
17 \usepackage{lipsum}[2005/01/26]% v1.0
18 \usepackage[draft]{showkeys}[2007/08/07]% v3.15
19 %%      Use final instead of draft to hide the keys. %%
20 \usepackage{hyperref}[2010/05/13]% v6.81e
21 \hypersetup{
22   extension=pdf,%
23   plainpages=false,%
24   pdfpagelabels=true,%
25   hyperindex=false,%
26   pdflang={en},%
27   pdftitle={pagesLTS package example},%
28   pdfauthor={Hans-Martin Muench},%
29   pdfsubject={Example for the pagesLTS package},%
30   pdfkeywords={LaTeX, pagesLTS, Hans-Martin Muench},%
31   pdfview=Fit,%
32   pdfstartview=Fit,%
33   pdfpagelayout=SinglePage,%
34   bookmarksopen=true%
35 }
36 \usepackage[pagecontinue=true,alphMult=ab,AlphaMulti=AB,fnsymbolmult=true,romanMult=true,RomanMulti=true]{pagesLTS}[2010/06/03]% v1.1b
37 %% These are the default options. %%
38 \makeatletter
39   \renewcommand{\@evenfoot}{%
40     {Page \thepage\ (\thecurrentpage; local: \thecurrentpagelocal) of %
41       \lastpageref{pagesLTS.roman}(\lastpageref{pagesLTS.roman.local}) + %
42       \lastpageref{pagesLTS.Roman}(\lastpageref{pagesLTS.Roman.local}) + %
43       \lastpageref{pagesLTS.arabic}(\lastpageref{pagesLTS.arabic.local}) + %
44       \lastpageref{pagesLTS.fnsymbol}(\lastpageref{pagesLTS.fnsymbol.local}) + %
45       \lastpageref{pagesLTS.alph}(\lastpageref{pagesLTS.alph.local}) + %
46       \lastpageref{pagesLTS.Alph}(\lastpageref{pagesLTS.Alph.local}) = %
47       \lastpageref{LastPages} pages.%
48     }
49   \renewcommand{\@oddfoot}{\@evenfoot}
50   \newcounter{pagesLTS.exampleArabic}
51   \setcounter{pagesLTS.exampleArabic}{3}
52   \newcounter{pagesLTS.examplealph}
53   \setcounter{pagesLTS.examplealph}{23}
54 %% Code from tcilatex.tex, Macros for Scientific Word and Scientific WorkPlace 5.5 <06 Oct 2005> %%
55 %% Copyright (C) 2005 Mackichan Software, Inc. %%
56 %% That macro file is NOT proprietary and may be freely copied and distributed. %%

```

```

57 \def\unit#1{\mathord{\thinspace\rm #1}}%
58 %% End of code from tcilatex.tex
59 \makeatother
60 \listfiles
61 \begin{document}
62 \pagenumbering{roman}
63 %% Note the first \pagenumbering immediately behind \begin{document}. %%
64
65 %%\addtocounter{page}{-2} %%
66
67 \section*{Example for pagesLTS}
68 \addcontentsline{toc}{section}{Example for pagesLTS}
69 \markboth{Example for pagesLTS}{Example for pagesLTS}
70
71 This example demonstrates the most common uses of package\
72 \textsf{pagesLTS}, v1.1b as of 2010/06/03 (HMM).\
73 The used options were \texttt{pagecontinue=true},
74 \texttt{alphMult=ab}, \texttt{AlphMulti=AB}, \linebreak
75 \texttt{fnsymbolmult=true},
76 \texttt{romanMult=true}, and \texttt{RomanMulti=true}
77 (the default ones).\
78 For more details please see the documentation!\
79
80 \label{keys} To hide the \pageref{keys}{\quad } use option
81 \texttt{final} instead of \texttt{draft} with the \textsf{showkeys}
82 package (or remove the package call from the preamble of
83 this document).\
84
85 \textbf{Trademarks} appear throughout this example without any
86 trademark symbol; they are the property of their respective
87 trademark owner. There is no intention of infringement; the
88 usage is to the benefit of the trademark owner.\
89
90 \textbf{Tip}: Use \textit{logical page numbers} for
91 the display of the pdf!\
92 (In Adobe Reader 9.3.1: \underline{E}dit >$
93 Prefere\underline{n}ces (Ctrl+k) >$ Page Display >$
94 Page Content and Information >$ Use logical page
95 \nolinebreak{\underline{n}umbers.})\
96
97 You want negative page numbers? Not only arabic, but even roman,
98 Roman, alph, Alph or fnsymbol ones? No problem, e.\,g. just give a\
99 \texttt{\textbackslash addtocounter\{page\}{- \textit{some number}}\}
100 in the source code of this example file (or uncomment the prepared
101 line)!
102

```

```

103 \bigskip
104
105 Save per page about $200\unit{ml}$ water, $2\unit{g}$ CO$_{2}$
106 and $2\unit{g}$ wood:\\
107 Therefore please print only if this is really necessary.
108
109 \newpage
110
111 \tableofcontents
112
113 \newpage
114
115 \pagenumbering{roman}
116 % in case the page numbering is changed before,
117 % otherwise pagesLTS.current.local.roman on this page
118 % would be undefined
119
120 \section{roman}
121
122 \noindent (\texttt{roman} page numbering was started before,
123 because the page numbering scheme was needed to start at
124 the first page, of course.)\\
125
126 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
127 \lastpageref{pagesLTS.0}\\
128
129 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
130
131 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
132 i.\,e. counted continuously from the first page: \theCurrentPage \\
133 You can get this also in other formats:
134 \roman{CurrentPage}, \Roman{CurrentPage}, \arabic{CurrentPage},
135 \fnsymbol{CurrentPage}, \alph{CurrentPage}, \Alph{CurrentPage}.
136
137 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
138 i.\,e. counted continuously from the first page of the
139 current page numbering sheme): \theCurrentPageLocal \\
140 You can get also this in other formats, too:
141 \roman{pagesLTS.current.local.roman}, \Roman{pagesLTS.current.local.roman},
142 \arabic{pagesLTS.current.local.roman}, \fnsymbol{pagesLTS.current.local.roman},
143 \alph{pagesLTS.current.local.roman}, \Alph{pagesLTS.current.local.roman},
144 but probably it only makes sense if page numbering scheme and format are
145 the same, e.\,g.\\
146 \texttt{\textbackslash Roman\{pagesLTS.current.local.Roman\}}\\
147 or \texttt{\textbackslash Alph\{pagesLTS.current.local.Alph\}}.\ %
148 \texttt{\textbackslash arabic\{\ldots \}}\ could make sense

```

149 even if combined with another page numbering scheme.  
 150 And this is exactly what `\texttt{\textbackslash theCurrentPageLocal}` does:\\  
 151 `\nolinebreak{\texttt{\textbackslash def\textbackslash theCurrentPageLocal%`  
 152 `\{\textbackslash arabic\{pagesLTS.current.local.\textbackslash pagesLTS@pnc\}\}}.\}`\\  
 153  
 154 `\noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }`  
 155 `(There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\`  
 156  
 157 `\noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }`  
 158 `(There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\`  
 159 `\lastpages{Roman}{1}~pages in the first Roman sector`  
 160 `(\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\`  
 161 `\lastpages{Roman}{2}~pages in the second Roman sector`  
 162 `(\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\`  
 163 `\lastpages{Roman}{3}~pages in the third Roman sector`  
 164 `(\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\`  
 165  
 166 When the option `\texttt{pagecontinue=false}` is used with the  
 167 `\textsf{pagesLTS}` package, the  
 168 `\texttt{\textbackslash lastpageref\{pagesLTS.Roman\}}` will point  
 169 to the same page as before, but this will have a lower number.\\  
 170 The `\texttt{\textbackslash lastpageref\{pagesLTS.Roman.local\}}`  
 171 will not change, because the number of pages does not change  
 172 (only the page numbers).\\  
 173  
 174 `\noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }`  
 175 `(There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,`  
 176 `because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\\`  
 177  
 178 `\noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\`  
 179 `(\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never`  
 180 `\texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\`  
 181 `(There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\`  
 182  
 183 `\noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }`  
 184 `(There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,`  
 185 `because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\\`  
 186  
 187 `\noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }`  
 188 `(There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\`  
 189  
 190 `\noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\`  
 191  
 192 `\noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\`  
 193 `(\texttt{lastpage} and \texttt{VeryLastPage} are identical, unless`  
 194 a package with output `\linebreak`

```

195 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
196 was added.)\
197
198 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
199 (=total number of pages)\
200
201 \lipsum[1-3]
202
203 \newpage
204
205 \pagenumbering{Roman}
206
207 \section{Roman\label{Roman}}
208 \subsection{Common Roman page numbering}
209
210 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
211 \lastpageref{pagesLTS.0}\
212
213 \noindent The page (\texttt{\textbackslash thepage}): \thepage \
214
215 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
216 i.\,e. counted continuously from the first page): \theCurrentPage \
217
218 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
219 i.\,e. counted continuously from the first page of the
220 current page numbering scheme): \theCurrentPageLocal \
221
222 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
223 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
224
225 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
226 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
227 \lastpages{Roman}{1}~pages in the first Roman sector
228 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
229 \lastpages{Roman}{2}~pages in the second Roman sector
230 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
231 \lastpages{Roman}{3}~pages in the third Roman sector
232 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\
233
234 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
235 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
236 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\
237
238 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \
239 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
240 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!\)\

```

241 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\

242

243 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }

244 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,

245 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\\

246

247 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }

248 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\

249

250 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\

251

252 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\

253 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless

254 a package with output \linebreak

255 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package

256 was added.)\\

257

258 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }

259 (=total number of pages)\\

260

261 \lipsum[1-4]

262

263 \newpage

264

265 \subsection{Last page of first Roman sector}

266 \texttt{\textbackslash lastpageref\{pagesLTS.Roman\}} does \textbf{not}

267 refer to this page (but there: \lastpageref{pagesLTS.Roman}),

268 because the option \texttt{pagecontinue=true}

269 was chosen. When a reference to this page is wanted,\\

270 \texttt{\textbackslash lastpageref\{pagesLTS.Roman.1\}}

271 can be used: \lastpageref{pagesLTS.Roman.1}.\\

272

273 \bigskip

274 There are \lastpages{Roman}{1}~pages

275 (\texttt{\textbackslash lastpages\{Roman\}\{1\}})

276 in this first Roman sector.\\

277 The Roman page numbering scheme is continued later in

278 section~\ref{Roman2})!

279

280 \newpage

281

282 \pagenumbering{arabic}

283

284 \section{arabic}

285

286 \subsection{Standard page numbering}

```

287
288 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
289 \lastpageref{pagesLTS.0}\\
290
291 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
292
293 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
294 i.\,e. counted continuously from the first page): \theCurrentPage \\
295
296 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
297 i.\,e. counted continuously from the first page of the
298 current page numbering scheme): \theCurrentPageLocal \\
299
300 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
301 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
302
303 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
304 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
305 \lastpages{Roman}{1}~pages in the first Roman sector
306 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
307 \lastpages{Roman}{2}~pages in the second Roman sector
308 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
309 \lastpages{Roman}{3}~pages in the third Roman sector
310 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
311
312 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
313 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
314 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\\
315
316 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
317 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
318 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
319 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
320
321 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
322 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
323 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\\
324
325 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
326 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
327
328 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
329
330 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
331 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
332 a package with output \linebreak

```

```

333 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
334 was added.)\\
335
336 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
337 (=total number of pages)\\
338
339 \lipsum[1-4]
340 \newpage
341
342 \subsection[Empty page style]{Also an empty page style is no problem\ %
343 for the current or total page count}
344
345 \bigskip
346
347 \thispagestyle{empty}
348
349 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
350 \lastpageref{pagesLTS.0}\\
351
352 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
353
354 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
355 i.\,e. counted continuously from the first page): \theCurrentPage \\
356
357 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
358 i.\,e. counted continuously from the first page of the
359 current page numbering scheme): \theCurrentPageLocal \\
360
361 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
362 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
363
364 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
365 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
366 \lastpages{Roman}{1}~pages in the first Roman sector
367 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
368 \lastpages{Roman}{2}~pages in the second Roman sector
369 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
370 \lastpages{Roman}{3}~pages in the third Roman sector
371 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
372
373 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
374 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
375 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\\
376
377 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
378 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never

```



```

379 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!\)\
380 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\
381
382 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
383 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
384 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\
385
386 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
387 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\
388
389 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\
390
391 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\
392 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
393 a package with output \linebreak
394 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
395 was added.)\
396
397 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
398 (=total number of pages)\
399
400 \lipsum[1-4]
401
402 \newpage
403
404 \subsection[addtocounter, setcounter]{Neither\ %
405 \texttt{\textbackslash addtocounter\{page\}} or\ %
406 \texttt{\textbackslash setcounter\{page\}} is a problem for the\ %
407 current or total page numbers}
408
409 (Here is an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}}
410 in the source code.)\
411 \addtocounter{page}{\value{pagesLTS.exampleArabic}}
412
413 \noindent The page (from \texttt{\textbackslash thepage} command): \thepage \
414
415 \noindent Current page (from \texttt{\textbackslash theCurrentPage}\ %
416 command), i.\,e. counted continuously from the first page): \theCurrentPage \
417
418 \noindent CurrentPageLocal (from \texttt{\textbackslash theCurrentPageLocal}\ %
419 command), i.\,e. counted continuously from the first page of the
420 current page numbering scheme): \theCurrentPageLocal\
421
422 \noindent Last page's number (LastPages): \lastpageref{LastPages}{\hskip3em }
423 (= total number of pages)\
424

```

```

425 \lipsum[1-7]
426
427 \newpage
428
429 \pagenumbering{fnsymbol}
430
431 \section{fnsymbol}
432
433 Adobe Acrobat Reader 9.3.1 does not show the correct page names
434 for all pages with \texttt{fnsymbol} page numbering scheme:
435
436 \begin{tabular}{c|c|c}
437 page number & page name & & shown by the Reader & \textsf{alphalph} & \\ \hline
438 $-1$ & \texttt{LaTeX Error} & & & & \ensuremath {- *} \\
439 $0$ & (ignored by \LaTeX) & & & & 0 \\
440 $1$ & \ensuremath {*} & & & & \ensuremath {*} \\
441 $2$ & \ensuremath {\dag} & & & & \ensuremath {\dag} \\
442 $3$ & \ensuremath {\ddag} & & & & \ensuremath {\ddag} \\
443 $4$ & \ensuremath {\mathsection} & & & & \ensuremath {\mathsection} \\
444 $5$ & \ensuremath {\mathparagraph} & & & & \ensuremath {\mathparagraph} \\
445 $6$ & \ensuremath {\delimiter "026B30D} & & "026B30D & & \ensuremath {**} \\
446 $7$ & \ensuremath {**} & & ** & & \ensuremath {\dag \dag} \\
447 $8$ & \ensuremath {\dag \dag} & & & & \ensuremath {\ddag \ddag} \\
448 $9$ & \ensuremath {\ddag \ddag} & & & & \ensuremath {\mathsection \mathsection} \\
449 $10$ & \texttt{LaTeX Error} & & & & \ensuremath {\mathparagraph \mathparagraph} \\
450 $11$ & \texttt{LaTeX Error} & & & & \ensuremath {***} \\
451 $12$ & \texttt{LaTeX Error} & & & & \ensuremath {\dag \dag \dag} \\
452 \end{tabular}
453
454 \noindent and so on, while at least the (\ldots\ of \ldots ) part
455 of the page number is displayed correctly.\\
456
457 \bigskip
458
459 Without option \texttt{fnsymbolmult=true} of the \textsf{pagesLTS} package
460 (and the help of Heiko Oberdiek's \textsf{alphalph} package),
461 after page~9
462 (\textquotedblleft \ensuremath {\ddag \ddag} \textquotedblright )
463 (and also for negative page numbers) there would just appear a
464 \begin{quote}
465 \begin{verbatim}
466 LaTeX Error: Counter too large
467 See the LaTeX manual or LaTeX Companion for explanation.
468 You've lost some text. Try typing <return> to proceed.
469 If that doesn't work, type X <return> to quit.
470 \end{verbatim}

```

```

471 \end{quote}
472 Now the page numbers after 5 (\ensuremath {\mathparagraph }) are
473 continued with the doubled \textquotedblleft number\textquotedblright\ of
474 the first, second, third,\ldots\ page (\ensuremath {**},
475 \ensuremath {\dagger \dagger }, \ensuremath {\ddagger \ddagger },
476 \ensuremath {\mathsection \mathsection },
477 \ensuremath {\mathparagraph \mathparagraph })),
478 and after the tenth page the \textquotedblleft number\textquotedblright\ is
479 tripled (\ensuremath {***}, \ensuremath {\dagger \dagger \dagger },\ldots).
480 Page zero is named 0 and negative pages just named like the positive ones
481 with addition of a minus sign~($-$).
482
483 \bigskip
484
485 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
486 \lastpageref{pagesLTS.0}\\
487
488 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
489
490 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
491 i.\,e. counted continuously from the first page): \theCurrentPage \\
492
493 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
494 i.\,e. counted continuously from the first page of the
495 current page numbering scheme): \theCurrentPageLocal \\
496
497 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
498 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
499
500 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
501 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
502 \lastpages{Roman}{1}~pages in the first Roman sector
503 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
504 \lastpages{Roman}{2}~pages in the second Roman sector
505 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
506 \lastpages{Roman}{3}~pages in the third Roman sector
507 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
508
509 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
510 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
511 because an \texttt{\textbackslash addtocounter\{page\}\{arabic{pagesLTS.exampleArabic}\}} was used.)\\
512
513 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
514 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
515 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
516 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\

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517
518 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
519 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
520 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\\
521
522 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
523 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
524
525 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
526
527 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
528 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
529 a package with output \linebreak
530 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
531 was added.)\\
532
533 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
534 (=total number of pages)\\
535
536 \lipsum[1-60]
537
538 \newpage
539
540 \pagenumbering{Roman}
541
542 \section{Roman - again!\label{Roman2}}
543
544 The page number would start with
545 \textquotedblleft I\textquotedblright\ again -- but
546 for the \textsf{pagesLTS} package (with option \texttt{pagecontinue=true},
547 or with option just \texttt{pagecontinue}, or even just
548 \nolinebreak{with\textbf{out}} option \texttt{pagecontinue=false}).
549 This package remembered the
550 (\arabic{pagesLTS.double.Roman}-1)\footnote{OK, here\ %
551 you have to compute this value for yourself, but\ %
552 subtracting one should be manageable for \TeX nicians.} pages already
553 done in Roman output, and therefore continues with page
554 \textquotedblleft \thepage \textquotedblright .\\
555 If you want to start with \textquotedblleft I\textquotedblright\ all
556 over again, you will have two pages with the same name,
557 but nevertheless you can do this by using option \texttt{pagecontinue=false}
558 or a \texttt{\textbackslash setcounter\{page\}\{1\}}\ here
559 (not demonstrated in this example file).\\
560
561 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
562 \lastpageref{pagesLTS.0}\\

```

```

563
564 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
565
566 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
567 i.\,e. counted continuously from the first page): \theCurrentPage \\
568
569 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
570 i.\,e. counted continuously from the first page of the
571 current page numbering scheme): \theCurrentPageLocal \\
572
573 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
574 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
575
576 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
577 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
578 \lastpages{Roman}{1}~pages in the first Roman sector
579 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
580 \lastpages{Roman}{2}~pages in the second Roman sector
581 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
582 \lastpages{Roman}{3}~pages in the third Roman sector
583 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
584
585 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
586 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
587 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\\
588
589 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
590 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
591 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
592 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
593
594 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
595 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
596 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\\
597
598 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
599 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
600
601 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
602
603 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
604 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
605 a package with output \linebreak
606 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
607 was added.)\\
608

```

```

609 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
610 (=total number of pages)\
611
612 \lipsum[1-6]
613
614 \newpage
615
616 \texttt{\textbackslash lastpageref\{pagesLTS.Roman\}} does \textbf{not}
617 refer to this page (but there: \lastpageref{pagesLTS.Roman}),
618 because the option \texttt{pagecontinue=true}
619 was chosen. When a reference to this page is wanted,\
620 \texttt{\textbackslash lastpageref\{pagesLTS.Roman.2\}}
621 can be used: \lastpageref{pagesLTS.Roman.2}.\
622
623 \bigskip
624 There are \lastpages{Roman}{2}~pages
625 (\texttt{\textbackslash lastpages\{Roman\}\{2\}})
626 in this second Roman sector.\
627 The Roman page numbering scheme is continued later in
628 section~\ref{Roman3})!
629
630 \newpage
631
632 \pagenumbering{alph}
633
634 \section{alph\label{alph}}
635
636 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
637 \lastpageref{pagesLTS.0}\
638
639 \noindent The page (\texttt{\textbackslash thepage}): \thepage \
640
641 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
642 i.\,e. counted continuously from the first page): \theCurrentPage \
643
644 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
645 i.\,e. counted continuously from the first page of the
646 current page numbering scheme): \theCurrentPageLocal \
647
648 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
649 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
650
651 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
652 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
653 \lastpages{Roman}{1}~pages in the first Roman sector
654 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\

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655 \lastpages{Roman}{2}~pages in the second Roman sector
656 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
657 \lastpages{Roman}{3}~pages in the third Roman sector
658 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
659
660 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
661 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
662 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\\
663
664 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
665 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
666 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
667 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
668
669 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
670 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
671 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\\
672
673 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
674 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
675
676 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
677
678 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
679 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
680 a package with output \linebreak
681 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
682 was added.)\\
683
684 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
685 (=total number of pages)\\
686
687 \lipsum[1-4]
688
689 \newpage
690
691 Without option \texttt{alphMult=ab} of the \textsf{pagesLTS} (and the help of
692 Heiko Oberdiek's \textsf{alphalph} package), after page
693 \textquotedblleft z\textquotedblright there would just appear a
694 \begin{quote}
695 \begin{verbatim}
696 LaTeX Error: Counter too large
697 See the LaTeX manual or LaTeX Companion for explanation.
698 You've lost some text. Try typing <return> to proceed.
699 If that doesn't work, type X <return> to quit.
700 \end{verbatim}

```

```

701 \end{quote}
702 Now the page numbers are continued aa, ab, ac,\ldots\ (aa, bb, cc,\ldots\ is
703 also possible, see the \textsf{pagesLTS} documentation).\
704 To demonstrate this, we add a\
705 \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}}\
706 in the source code here.
707
708 \addtocounter{page}{\arabic{pagesLTS.examplealph}}
709
710 \bigskip
711
712 \lipsum[1-18]
713
714 \newpage
715
716 \pagenumbering{Roman}
717
718 \section{Roman - third time!\label{Roman3}}
719
720 The page number would start with
721 \textquotedblleft I\textquotedblright\ again -- but
722 for the \textsf{pagesLTS} package (with option \texttt{pagecontinue=true},
723 or with option just \texttt{pagecontinue}, or even just
724 \nolinebreak[with\textbf{out}] option \texttt{pagecontinue=false}).
725 This package remembered the
726 (\arabic{pagesLTS.double.Roman}-1)\footnote{OK, here\ %
727 you have to compute this value for yourself, but\ %
728 subtracting one should be manageable for \TeX nicians.} pages already
729 done in Roman output, and therefore continues with page
730 \textquotedblleft \thepage \textquotedblright \.
731 If you want to start with \textquotedblleft I\textquotedblright\ all
732 over again, you will have (at least) two pages with the same name,
733 but nevertheless you can do this by using option
734 \texttt{pagecontinue=false} instead of \texttt{pagecontinue=true}
735 (not demonstrated here).\
736
737 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
738 \lastpageref{pagesLTS.0}\
739
740 \noindent The page (\texttt{\textbackslash thepage}): \thepage \
741
742 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
743 i.\,e. counted continuously from the first page: \theCurrentPage \
744
745 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
746 i.\,e. counted continuously from the first page of the

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```

747 current page numbering scheme): \theCurrentPageLocal \\
748
749 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
750 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
751
752 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
753 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
754 \lastpages{Roman}{1}~pages in the first Roman sector
755 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
756 \lastpages{Roman}{2}~pages in the second Roman sector
757 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
758 \lastpages{Roman}{3}~pages in the third Roman sector
759 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
760
761 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
762 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
763 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\\
764
765 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
766 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
767 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
768 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
769
770 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
771 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
772 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\\
773
774 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
775 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
776
777 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
778
779 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
780 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
781 a package with output \linebreak
782 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
783 was added.)\\
784
785 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
786 (=total number of pages)\\
787
788 \lipsum[1-3]
789
790 \newpage
791
792 \lastpageref{pagesLTS.Roman}

```

```

793 (\texttt{\textbackslash lastpageref\{pagesLTS.Roman\}})
794 \textbf{does} refers to this page, because the option
795 \texttt{pagecontinue=true} was chosen. Also\\
796 \texttt{\textbackslash lastpageref\{pagesLTS.Roman.3\}}
797 can be used: \lastpageref{pagesLTS.Roman.3}.\
798
799 \bigskip
800
801 There are \lastpages{Roman}{3}~pages
802 (\texttt{\textbackslash lastpages\{Roman\}\{3\}})
803 in this third Roman sector.\
804
805 \newpage
806
807 \pagenumbering{Alph}
808
809 \section{Alph}
810
811 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
812 \lastpageref{pagesLTS.0}\
813
814 \noindent The page (\texttt{\textbackslash thepage}): \thepage \
815
816 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
817 i.\,e. counted continuously from the first page): \theCurrentPage \
818
819 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
820 i.\,e. counted continuously from the first page of the
821 current page numbering scheme): \theCurrentPageLocal \
822
823 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}\{\hskip4em }
824 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
825
826 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}\{\hskip3em }
827 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
828 \lastpages{Roman}{1}~pages in the first Roman sector
829 (\pageref{Roman}\{\hskip3em }-\lastpageref{pagesLTS.Roman.1}\{\hskip3em }),\\
830 \lastpages{Roman}{2}~pages in the second Roman sector
831 (\pageref{Roman2}\{\hskip3em }-\lastpageref{pagesLTS.Roman.2}\{\hskip3em }), and\\
832 \lastpages{Roman}{3}~pages in the third Roman sector
833 (\pageref{Roman3}\{\hskip3em }-\lastpageref{pagesLTS.Roman.3}\{\hskip3em }).\
834
835 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}\{\hskip5em }
836 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
837 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\
838

```

```

839 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
840 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
841 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!\)\
842 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\
843
844 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
845 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
846 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\
847
848 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
849 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\
850
851 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\
852
853 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\
854 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
855 a package with output \linebreak
856 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
857 was added.)\
858
859 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
860 (=total number of pages)\
861
862 \lipsum[1-3]
863
864 Without option \texttt{alphMulti=AB} of the \textsf{pagesLTS} (and the help of
865 Heiko Oberdiek's \textsf{alphalph} package), after page
866 \textquotedblleft Z\textquotedblright there would just appear a
867 \begin{quote}
868 \begin{verbatim}
869 LaTeX Error: Counter too large
870 See the LaTeX manual or LaTeX Companion for explanation.
871 You've lost some text. Try typing <return> to proceed.
872 If that doesn't work, type X<return> to quit.
873 \end{verbatim}
874 \end{quote}
875 Now the page numbers are continued AA, AB, AC,\ldots\ (AA, BB, CC,\ldots\ is
876 also possible, see the \textsf{pagesLTS} documentation).\
877 This is not demonstrated here, but see section~\ref{alph}.
878
879 \newpage
880
881 \section{The End}
882
883 \noindent First page (\texttt{\textbackslash lastpageref\{pagesLTS.0\}}):
884 \lastpageref{pagesLTS.0}\

```

```

885
886 \noindent The page (\texttt{\textbackslash thepage}): \thepage \\
887
888 \noindent Current page (\texttt{\textbackslash theCurrentPage}),
889 i.\,e. counted continuously from the first page): \theCurrentPage \\
890
891 \noindent CurrentPageLocal (\texttt{\textbackslash theCurrentPageLocal}),
892 i.\,e. counted continuously from the first page of the
893 current page numbering scheme): \theCurrentPageLocal \\
894
895 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
896 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
897
898 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
899 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
900 \lastpages{Roman}{1}~pages in the first Roman sector
901 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
902 \lastpages{Roman}{2}~pages in the second Roman sector
903 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
904 \lastpages{Roman}{3}~pages in the third Roman sector
905 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\
906
907 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
908 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
909 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.exampleArabic}\}} was used.)\\
910
911 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
912 (\texttt{\textbackslash lastpageref\{pagesLTS.fnsymbol\}} -- never
913 \texttt{\textbackslash pageref\{pagesLTS.fnsymbol\}}!)\\
914 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
915
916 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
917 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
918 because an \texttt{\textbackslash addtocounter\{page\}\{\arabic{pagesLTS.examplealph}\}} was used.)\\
919
920 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
921 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
922
923 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
924
925 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
926 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
927 a package with output \linebreak
928 \texttt{\textbackslash AtEndDocument} after the \textsf{pagesLTS} package
929 was added.)\\
930

```

```

931 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
932 (=total number of pages)\
933
934 \medskip
935
936 \noindent Page \thepage\ (\theCurrentPage; local: \theCurrentPageLocal) of %
937 \lastpageref{pagesLTS.roman} (\lastpageref{pagesLTS.roman.local}) + %
938 \lastpageref{pagesLTS.Roman} (\lastpageref{pagesLTS.Roman.local}) + %
939 \lastpageref{pagesLTS.arabic} (\lastpageref{pagesLTS.arabic.local}) + %
940 \lastpageref{pagesLTS.fnsymbol} (\lastpageref{pagesLTS.fnsymbol.local}) + %
941 \lastpageref{pagesLTS.alph} (\lastpageref{pagesLTS.alph.local}) + %
942 \lastpageref{pagesLTS.Alph} (\lastpageref{pagesLTS.Alph.local}) = %
943 \lastpageref{LastPages} pages.
944
945 \end{document}
946 \end{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<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> and announcing the name and version of this package.

```
947 \*package)
948 \NeedsTeXFormat{LaTeX2e}[1994/06/01]
949 \ProvidesPackage{pagesLTS}[2010/06/03 v1.1b
950           Refers to special pages' numbers/names (HMM)]%
951
```

A short description of the `pagesLTS` package:

```
952 %% Allow for things like\
953 %% |Page \thepage\ (\theCurrentPage; local: \theCurrentPageLocal) of %
954 %% \lastpageref{pagesLTS.roman}(\lastpageref{pagesLTS.roman.local}) + %
955 %% \lastpageref{pagesLTS.Roman}(\lastpageref{pagesLTS.Roman.local}) + %
956 %% \lastpageref{pagesLTS.arabic}(\lastpageref{pagesLTS.arabic.local}) + %
957 %% \lastpageref{pagesLTS.fnsymbol}(\lastpageref{pagesLTS.fnsymbol.local}) + %
958 %% \lastpageref{pagesLTS.alph}(\lastpageref{pagesLTS.alph.local}) + %
959 %% \lastpageref{pagesLTS.Alph}(\lastpageref{pagesLTS.Alph.local}) = %
960 %% \lastpageref{LastPages} pages.|\
961 %% to get\
962 %% 'Page d (57; local: 4) of ii(2) + XX(20) + *(1) + 30(30) + e(5) + C(3) = 61 pages.'
963
```

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

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

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

```
965 \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):

```
966 \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).

```
967 \RequirePackage{undolabl}[2010/06/03]% v1.0b
```

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

```
968 %% pagesLTS package uses Prelim@EveryShipout code from the
969 %% prelim2e package [2009/05/29 v1.3] by Martin Schröder, thanks!
970
```

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

A last information for the user(s):

```
971 %% pagesLTS may work with earlier versions of those packages,  
972 %% but this was not tested. Please consider updating your packages  
973 %% to the most recent version (if they are not already the most  
974 %% recent version).  
975
```

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 should be 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.

```
976 %% The recent version of the endfloat package is v2.4i as of 1995/10/11.  
977 %% The pagesLTS package is not fully compatible with version 2.0  
978 %% (and earlier) of the endfloat package, because those versions  
979 %% redefined the \enddocument command.  
980
```

The options are introduced:

```
981 \SetupKeyvalOptions{family = pagesLTS,prefix = pagesLTS@}  
982 \DeclareBoolOption[true]{pagecontinue} % \pagesLTS@pagecontinue  
983 \DeclareStringOption[alphMult]{ab}  
984 \DeclareStringOption[AlphMulti]{AB}  
985 \DeclareBoolOption[true]{romanMult}  
986 \DeclareBoolOption[true]{RomanMulti}  
987 \DeclareBoolOption[true]{fnsymbolmult}  
988  
989 \ProcessKeyvalOptions*  
990
```

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

```
991 \def\pagesLTS@zero{0}  
992 \def\pagesLTS@one{1}  
993
```

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.

```
994 \ifpagesLTS@pagecontinue%  
995 \PackageInfo{pagesLTS}{Option pagecontinue enabled\MessageBreak%  
996   (maybe by default):\MessageBreak%  
997   The pagesLTS package will continue the page numbering,\MessageBreak%  
998   when the same page numbering scheme is used twice.\MessageBreak%
```

```

999   If you do not want this, call pagesLTS with option\MessageBreak%
1000   pagecontinue=false\MessageBreak%
1001   (or use \ setcounter{page}=1).\MessageBreak%
1002 }%
1003 \else%
1004 \PackageWarningNoLine{pagesLTS}{Option pagecontinue is false:\MessageBreak%
1005   The pagesLTS package was used, but the option\MessageBreak%
1006   pagecontinue was set to false.\MessageBreak%
1007   If you want the page numbers to be continued,\MessageBreak%
1008   when the same page numbering scheme is used twice,\MessageBreak%
1009   please call pagesLTS with option pagecontinue=true,\MessageBreak%
1010   otherwise the page number is reset to one each time\MessageBreak%
1011   the page numbering scheme is changed.\MessageBreak%
1012   For details please see the documentation!\MessageBreak%
1013 }%
1014 \fi%
1015

```

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`.

```

1016 \def\pagesLTS@ab{ab}
1017 \def\pagesLTS@bb{bb}
1018 \def\pagesLTS@ABi{AB}
1019 \def\pagesLTS@BBi{BB}
1020 \def\pagesLTS@messageaMz{Option alphMult=0 found:\MessageBreak%
1021   The pagesLTS package was used, but the option\MessageBreak%
1022   alphMult was set to 0 (zero).\MessageBreak%
1023   If you want the page numbers to be extended\MessageBreak%
1024   after z, you have to organize this yourself now.\MessageBreak%
1025   For automatic continuation, please use the\MessageBreak%
1026   alphas package and call pagesLTS\MessageBreak%
1027   with option alphMult=ab (for aa, ab, ac, ad,...) or\MessageBreak%
1028   with option alphMult=bb (for aa, bb, cc, dd,...).\MessageBreak%
1029   For details please see the documentation!\MessageBreak%
1030 }
1031 \def\pagesLTS@messageAMiz{Option AlphMulti=0 found:\MessageBreak%
1032   The pagesLTS package was used, but the option\MessageBreak%
1033   AlphMulti was set to 0 (zero).\MessageBreak%
1034   If you want the page numbers to be extended\MessageBreak%
1035   after Z, you have to organize this yourself now.\MessageBreak%
1036   For automatic continuation, please use the\MessageBreak%
1037   alphas package and call pagesLTS\MessageBreak%

```



```

1038 with option AlphMulti=AB (for AA, AB, AC, AD,...) or\MessageBreak%
1039 with option AlphMulti=BB (for AA, BB, CC, DD,...).\MessageBreak%
1040 For details please see the documentation!\MessageBreak%
1041 }
1042 \def\pagesLTS@messagefsmz{Option fnsymbolmult is set to false:\MessageBreak%
1043 The pagesLTS package was used, but the option\MessageBreak%
1044 fnsymbolmult was set to false.\MessageBreak%
1045 If you want the page numbering of the footnotesymbol\MessageBreak%
1046 scheme to be extended using the AlphAlph package,\MessageBreak%
1047 please call pagesLTS with option fnsymbolmult=true,\MessageBreak%
1048 otherwise page numbers of the footnotesymbol scheme\MessageBreak%
1049 greater than nine will need to be defined otherwise.\MessageBreak%
1050 For details please see the documentation!\MessageBreak%
1051 }
1052
1053 \ifx\pagesLTS@alphMult\pagesLTS@ab%
1054 \relax%
1055 \else%
1056 \ifx\pagesLTS@alphMult\pagesLTS@bb%
1057 \relax%
1058 \else%
1059 \ifx\pagesLTS@alphMult\pagesLTS@zero%
1060 \PackageWarningNoLine{pagesLTS}{\pagesLTS@messageaMz }%
1061 \else%
1062 \PackageError{pagesLTS}{Unknown option value}%
1063 {The pagesLTS package was used with option\MessageBreak%
1064 alphMult= \pagesLTS@alphMult . Only values\MessageBreak%
1065 ab, bb, and 0 (zero) are valid.\MessageBreak%
1066 The default ab is set.\MessageBreak%
1067 For details please see the documentation!\MessageBreak%
1068 }%
1069 \setkeys{pagesLTS}{alphMult=ab}%
1070 \fi%
1071 \fi%
1072 \fi%
1073
1074 \ifx\pagesLTS@AlphMulti\pagesLTS@ABi%
1075 \relax%
1076 \else%
1077 \ifx\pagesLTS@AlphMulti\pagesLTS@BBi%
1078 \relax%
1079 \else%
1080 \ifx\pagesLTS@AlphMulti\pagesLTS@zero%
1081 \PackageWarningNoLine{pagesLTS}{\pagesLTS@messageAMiz }%
1082 \else%
1083 \PackageError{pagesLTS}{Unknown option value}%

```

```

1084 {The pagesLTS package was used with option\MessageBreak%
1085 AlphMulti= \pagesLTS@AlphMulti . Only values\MessageBreak%
1086 AB, BB, and 0 (zero) are valid.\MessageBreak%
1087 The default AB is set.\MessageBreak%
1088 For details please see the documentation!\MessageBreak%
1089 }%
1090 \setkeys{pagesLTS}{AlphMulti=AB}%
1091 \fi%
1092 \fi%
1093 \fi%
1094

```

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

```

1095 \ifpagesLTS@romanMult%
1096 \PackageInfo{pagesLTS}{Option romanMult enabled\MessageBreak%
1097 (maybe by default):\MessageBreak%
1098 The pagesLTS package will extend the page numbering\MessageBreak%
1099 of the roman scheme below i with\MessageBreak%
1100 0, -i, -ii, -iii, -iv,...\MessageBreak%
1101 If you do not want this, call pagesLTS with option\MessageBreak%
1102 romanMult=false.\MessageBreak%
1103 }%
1104 \else%
1105 \PackageWarningNoLine{pagesLTS}{Option romanMult is set to false:\MessageBreak%
1106 The pagesLTS package was used, but the option\MessageBreak%
1107 romanMult was set to false.\MessageBreak%
1108 If you want the page numbering of the roman scheme\MessageBreak%
1109 to be extended below i,\MessageBreak%
1110 please call pagesLTS with option romanMult=true,\MessageBreak%
1111 otherwise zero and negative page numbers of the\MessageBreak%
1112 roman scheme will need to be defined otherwise.\MessageBreak%
1113 For details please see the documentation!\MessageBreak%
1114 }%
1115 \fi%
1116

```

Same for the Roman page numbering scheme.

```

1117 \ifpagesLTS@RomanMulti%
1118 \PackageInfo{pagesLTS}{Option RomanMulti enabled\MessageBreak%
1119 (maybe by default):\MessageBreak%
1120 The pagesLTS package will extend the page numbering\MessageBreak%
1121 of the Roman scheme below I with\MessageBreak%
1122 0, -I, -II, -III, -IV,...\MessageBreak%
1123 If you do not want this, call pagesLTS with option\MessageBreak%
1124 RomanMulti=false.\MessageBreak%
1125 }%
1126 \else%

```

```

1127 \PackageWarningNoLine{pagesLTS}{Option RomanMulti is set to false:\MessageBreak%
1128 The pagesLTS package was used, but the option\MessageBreak%
1129 RomanMulti was set to false.\MessageBreak%
1130 If you want the page numbering of the Roman scheme\MessageBreak%
1131 to be extended below i,\MessageBreak%
1132 please call pagesLTS with option RomanMulti=true,\MessageBreak%
1133 otherwise zero and negative page numbers of the\MessageBreak%
1134 Roman scheme will need to be defined otherwise.\MessageBreak%
1135 For details please see the documentation!\MessageBreak%
1136 }%
1137 \fi%
1138

```

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

```

1139 \ifpagesLTS@fnsymbolmult%
1140 \PackageInfo{pagesLTS}{Option fnsymbolmult enabled\MessageBreak%
1141 (maybe by default):\MessageBreak%
1142 The pagesLTS package will extend the page numbering\MessageBreak%
1143 of the footnotesymbol scheme using the AlphAlph\MessageBreak%
1144 package.\MessageBreak%
1145 If you do not want this, call pagesLTS with option\MessageBreak%
1146 fnsymbolmult=false.\MessageBreak%
1147 }%
1148 \else%
1149 \PackageWarningNoLine{pagesLTS}{\pagesLTS@messagefsmz }%
1150 \fi%
1151

```

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

```

1152 \def\pagesLTS@pnc{0}
1153 \def\pagesLTS@called{0}
1154 \def\pagesLTS@fns{fnsymbol}
1155 \def\pagesLTS@alph{alph}
1156 \def\pagesLTS@Alph{Alph}
1157 \def\pagesLTS@AlphAlph{0}
1158 \def\pagesLTS@hyper{0}
1159 \def\pagesLTS@rerun{0}
1160 \def\pagesLTS@eso{0}
1161 \def\pagesLTS@esov{0}
1162 \def\lastpageref{\lastpagereftxt}

```

```

1163 \def\pagesLTS@messageNPN{%
1164   The pagesLTS package was used, but\MessageBreak%
1165   \textbackslash pagenumbering\MessageBreak%
1166   was not called at the beginning of the document\MessageBreak%
1167   (maybe earlier or later).\MessageBreak%
1168   Please use \textbackslash pagenumbering\MessageBreak%
1169   (with an argument like arabic, roman, Roman,\MessageBreak%
1170   fnsymbol, alph, or Alph) at the beginning\MessageBreak%
1171   of your document! Otherwise your document\MessageBreak%
1172   will probably compile, but the pagesLTS\MessageBreak%
1173   package might not be able to get all labels\MessageBreak%
1174   for the references to the respective pages\MessageBreak%
1175   right.\MessageBreak%
1176 }
1177

```

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

```

1178 \let\OrigPagenumbering\pagenumbering
1179

```

Defining some new counters (and doing related things):

```

1180 \newcounter{CurrentPage}
1181 \setcounter{CurrentPage}{1}
1182 \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.

```

1183 \newcounter{pagesLTS.pagenr}

```

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

```

1184 \newcounter{pagesLTS.fnsymbol}
1185 \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.

```

1186 \newcounter{pagesLTS.fnsymbol.cont}

```

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

```

1187 \newcounter{pagesLTS.double.0}

```

The same holds for `pagesLTS.current.local.0`, and the first local page gets the number one.

```

1188 \newcounter{pagesLTS.current.local.0}
1189 \setcounter{pagesLTS.current.local.0}{1}

```

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

```
1190 \newcounter{pagesLTS.pnc.0}
1191
```

`\xroman` When `\roman{...}` is used with a value  $< 1$ , L<sup>A</sup>T<sub>E</sub>X 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,  $-|...|$  (i.e. -i, -ii, -iii, -iv,...) for negative values, and 0 for all other values (which should be zero).

```
1192 \newcommand{\xroman}[1]{%
1193   \ifnum\value{#1}>0 %
1194     \roman{#1}%
1195   \else%
1196     \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).

```
1197   -\romannumeral\number-\arabic{#1}
1198   \else%
1199     0%
1200   \fi%
1201   \fi%
1202 }
1203
```

`\XXRoman` `\XXRoman` 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`.<sup>5</sup> Therefore we have a look at L<sup>A</sup>T<sub>E</sub>X’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 L<sup>A</sup>T<sub>E</sub>X Kernel File m ltcntrs.dtx 105 Counters and Lengths).

```
1204 \newcommand{\XXRoman}[1]{%
1205   \ifnum\value{#1}>0 %
1206     \Roman{#1}%
1207   \else%
1208     \ifnum\value{#1}<0 %
1209     -\expandafter\@slowromancap\romannumeral\number-\arabic{#1}@%
```

---

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

```

1210    \else%
1211      0%
1212    \fi%
1213  \fi%
1214  }
1215

```

`\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`):

```

1216 \newcommand{\lastpages}[2]{%
1217   \@ifundefined{c@pagesLTS.#1.#2.local.cnt}{%
1218     \newcounter{pagesLTS.#1.#2.local.cnt}}{\relax}%
1219   \arabic{pagesLTS.#1.#2.local.cnt}%
1220   }
1221

```

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

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

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 \one \gdef\thepage{\csname @#1\endcsname
    \c@page}}

```

```

1222 \newcommand{\pagesLTS@ifcounter}[1]{%
1223   \@ifundefined{c@#1}{\newcounter{#1}}{\relax}%
1224   }
1225

```

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

```

1226 \newcommand{\pagesLTS@writelabel}[1]{%
1227   \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`.

```

1228 \pagesLTS@putlabel{pagesLTS.#1}{\thepage}
1229 \addtocounter{page}{-1}%
1230 \ifx\pagesLTS@pnc\pagesLTS@zero%
1231 \relax%

```

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

```

1232 \else%
1233 \addtocounter{page}{+1}%
1234 \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.

```

1235 \addtocounter{page}{-1}%
1236 \fi%
1237 }
1238

```

`\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 `\XXRoman`), see page 45.

```

1239
1240 %% The following code is from Heiko Oberdiek [2010/04/18], %%
1241 %% expanding his alphalph package [2010/04/18] v2.3. (Thanks!) %%
1242 \newcommand*{\erroralphalph}[2]{%
1243 \ifnum\value{#2}>0 %
1244 #1{\value{#2}}%
1245 \else
1246 \ifnum\value{#2}<0 %
1247 -#1{\expandafter\@gobble\the\value{#2}}%
1248 \else
1249 0%
1250 \fi
1251 \fi
1252 }
1253 %% End of code from Heiko Oberdiek %%
1254 %% Check and Error/Warning messages have been moved to %%
1255 %% \EveryShipout, because messages inside e. g. the \pageref %%
1256 %% command can cause trouble. %%
1257

```

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

```

1258
1259 \newcommand{\expandPagenumbering}[1]{%
1260   \let\OrigthePage\thePage%
1261   \def\pagesLTS@tmpC{arabic}%
1262   \ifx\pagesLTS@pnc\pagesLTS@tmpC%
1263     \relax%

```

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

```

1264   \else%
1265     \def\pagesLTS@tmpC{roman}%
1266     \ifx\pagesLTS@pnc\pagesLTS@tmpC%
1267       \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 45) expands the usable roman page numbers to values below 1 (i, I, respectively), see subsection 2.1.3.

```

1268       \renewcommand*{\thePage}{\xroman{page}}%
1269     \fi%
1270   \else%
1271     \def\pagesLTS@tmpC{Roman}%
1272     \ifx\pagesLTS@pnc\pagesLTS@tmpC%
1273       \ifpagesLTS@RomanMulti%

```

The same for `\Roman` page numbering, expanded by `\XXRoman` (see page 45).

```

1274       \renewcommand*{\thePage}{\XXRoman{page}}%
1275     \fi%
1276   \else%
1277     \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.

```

1278     \ifx\pagesLTS@alphMult\pagesLTS@ab%
1279       \renewcommand*{\thePage}{\erroralphalph{\alphalph}{page}}%
1280     \else \ifx\pagesLTS@alphMult\pagesLTS@bb%
1281       \renewcommand*{\thePage}{\erroralphalph{\alphMult}{page}}%
1282     \fi%
1283   \fi%
1284 \else%
1285   \ifx\pagesLTS@pnc\pagesLTS@Alph%
1286     \ifx\pagesLTS@AlphMulti\pagesLTS@ABi%
1287       \renewcommand*{\thePage}{\erroralphalph{\AlphAlph}{page}}%
1288     \else \ifx\pagesLTS@AlphMulti\pagesLTS@BBi%
1289       \renewcommand*{\thePage}{\erroralphalph{\AlphMult}{page}}%
1290     \fi%
1291   \fi%

```



```

1292         \else%
1293         \ifx\pagesLTS@pnc\pagesLTS@fns%

```

Same for \fnsymbol page numbers.

```

1294         \ifpagesLTS@fnsymbolmult%
1295         \renewcommand*{\thepage}{\erroralphalph{\fnsymbolmult}{page}}%
1296         \fi%
1297         \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.

```

1298         \PackageError{pagesLTS}{unknown page numbering scheme}{%
1299         The pagesLTS package encountered the unknown\MessageBreak%
1300         page numbering scheme\MessageBreak%
1301         ‘#1’. \MessageBreak%
1302         If this is no typing mistake, it might work\MessageBreak%
1303         - or it might not work.\MessageBreak%
1304         \@ehc%
1305         }
1306         \fi%
1307         \fi%
1308         \fi%
1309         \fi%
1310         \fi%
1311         \fi%
1312         \let\pagesLTS@tmpC\undefined%
1313     }
1314

```

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

```
1315 \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.

```
1316 \edef\pagesLTS@tmpA{#1}%  
1317 \ifx\pagesLTS@pnc\pagesLTS@tmpA%  
1318 \relax%  
1319 \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.

```
1320 \ifnum \value{CurrentPage}>1%  
1321 \addtocounter{page}{-1}%  
1322 \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.

```
1323 \newcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}%  
1324 \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%  
1325 \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):

```
1326 \ifx\pagesLTS@pnc\pagesLTS@fns%  
1327 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%  
1328 \pagesLTS@ifcounter{pagesLTS.tmpa}%  
1329 \setcounter{pagesLTS.tmpa}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%  
1330 \addtocounter{pagesLTS.tmpa}{-1}%  
1331 \pagesLTS@ifcounter{pagesLTS.tmpb}%  
1332 \addtocounter{pagesLTS.tmpb}{\value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.tmpa}.local.count}}%  
1333 \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%  
1334 -\value{pagesLTS.tmpb}}%  
1335 \fi%
```

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

```
1336 \else%  
1337 \pagesLTS@writelabel{\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}}%
```

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

```
1338 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}<2%
```

an unnumbered label is also written:

```
1339 \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.

```

1340      \else%
1341        \pagesLTS@ifcounter{pagesLTS.tmpa}%
1342        \setcounter{pagesLTS.tmpa}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%
1343        \addtocounter{pagesLTS.tmpa}{-1}%
1344        \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.done}%
1345        \addtocounter{pagesLTS.\pagesLTS@pnc.done}{%
1346          \value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.tmpa}.local.count}}%
1347        \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1348          -\value{pagesLTS.\pagesLTS@pnc.done}}%
1349      \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:

```

1350      \if@files%
1351        \immediate\write\@auxout{\string
1352          \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}}%
1353      \fi%
1354      \edef\pagesLTS@tmpB{\arabic{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}}%
1355      \if@files%
1356        \immediate\write\@auxout{\string
1357          \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}{\pagesLTS@tmpB}}%
1358      \fi%
1359    \fi%

```

For further code for the case of `fnsymbol` please see below (`\lastpagereftxt`, page 53). The last page number is saved, in case the same page numbering scheme is continued later:

```

1360      \setcounter{pagesLTS.double.\pagesLTS@pnc}{\value{page}}%

```

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

```

1361      \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{+1}%
1362      \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:

```

1363      \global\edef\pagesLTS@pnc{#1}%

```

The new page numbering scheme is now started for real:

```

1364      \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 `AlphaAlpha` package. `\arabic` does not need any expansion. `\roman` and `\Roman` at least receive a definition for zero.

```

1365      \expandPagenumbering{#1}

```

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

```
1366 \pagesLTS@ifcounter{pagesLTS.pnc.\pagesLTS@pnc}%
```

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

```
1367 \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):

```
1368 \pagesLTS@ifcounter{pagesLTS.double.\pagesLTS@pnc}%
```

```
1369 \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.

```
1370 \ifpagesLTS@pagecontinue%
```

```
1371 \setcounter{page}{\value{pagesLTS.double.\pagesLTS@pnc}}%
```

```
1372 \else%
```

```
1373 \setcounter{page}{1}%
```

```
1374 \fi%
```

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

```
1375 \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.

```
1376 \ifnum \value{pagesLTS.double.\pagesLTS@pnc}=1%
```

```
1377 \setcounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
```

```
1378 \fi%
```

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

```
1379 \else%
```

```
1380 %% before the first page has shipped out
```

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

```
1381 \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 `wltpageno.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:

```
1382 \countdef\c@page=0 \c@page=1
```

```
1383 \def\c1@page{}
```

```
1384 \global\c@page \@ne
```

```
1385 \global\def\thepage{\csname \expandafter @\pagesLTS@pnc \endcsname \c@page}%
```

If a page numbering scheme is used, which is not known by L<sup>A</sup>T<sub>E</sub>X, 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 `AlphaAlpha` package. `\arabic` does not need any expansion. `\roman` and `\Roman` at least receive a definition for zero.

```
1386 \expandPagenumbering{#1}
```

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

```
1387 \pagesLTS@ifcounter{pagesLTS.pnc.\pagesLTS@pnc}%
1388 \setcounter{pagesLTS.pnc.\pagesLTS@pnc}{1}%
1389 \pagesLTS@ifcounter{pagesLTS.double.\pagesLTS@pnc}%
1390 \setcounter{pagesLTS.double.\pagesLTS@pnc}{1}%
1391 \pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc}%
1392 \setcounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
1393 \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:

```
1394 \gdef\pagesLTS@called{1}%
1395 \fi%
```

We do not need the temporary definitions any more.

```
1396 \let\pagesLTS@tmpA\undefined%
1397 \let\pagesLTS@tmpB\undefined%
1398 }
1399
```

`\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}`.

```
1400 \newcommand{\lastpagereftxt}[1]{%
1401 \def\pagesLTS@tmpA{#1}%
1402 \def\pagesLTS@tmpB{pagesLTS.fnsymbol.local}%
1403 \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1404 \ifx\pagesLTS@hyper\pagesLTS@one%
1405 \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}{%
1406 {\arabic{pagesLTS.fnsymbol.local}}}%
1407 \else \arabic{pagesLTS.fnsymbol.local}%
1408 \fi%
```

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).

```
1407 \else \arabic{pagesLTS.fnsymbol.local}%
1408 \fi%
```

Otherwise just the common `\pageref` is applied:

```
1409 \else%
1410 \pageref{#1}%
1411 \fi%
```

We do not need the temporary definitions any more.

```

1412 \let\pagesLTS@tmpA\undefined%
1413 \let\pagesLTS@tmpB\undefined%
1414 }
1415

```

`\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).

```

1416 \newcommand{\lastpagerefend}[1]{%
1417   \def\pagesLTS@tmpA{#1}%
1418   \def\pagesLTS@tmpB{pagesLTS.fnsymbol.local}%
1419   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1420     \ifx\pagesLTS@hyper\pagesLTS@one%
1421       \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}{%
1422         {\arabic{pagesLTS.fnsymbol.local}}}%
1423     \else \arabic{pagesLTS.fnsymbol.local}%
1424     \fi%
1425   \else%
1426     \def\pagesLTS@tmpB{pagesLTS.fnsymbol}%
1427     \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1428       \ifx\pagesLTS@hyper\pagesLTS@one%
1429         \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}{%
1430           {\pagesLTS.lastpage}}%
1431       \else \pageref{pagesLTS.fnsymbol}%
1432       \fi%
1433     \else%
1434       \def\pagesLTS@tmpB{LastPage}%
1435       \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1436         \ifx\pagesLTS@hyper\pagesLTS@one%
1437           \href{\#pagesLTS.fnsymbol.local.\pagesLTS@eso}%
1438             {\pagesLTS.lastpage}%
1439         \else \pageref{LastPage}%
1440         \fi%
1441     \else%
1442       \def\pagesLTS@tmpB{VeryLastPage}%
1443       \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1444         \ifx\pagesLTS@hyper\pagesLTS@one%
1445           \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}{%
1446             {\pagesLTS.lastpage}}%
1447         \else \pageref{VeryLastPage}%
1448         \fi%
1449     \else%
1450       \def\pagesLTS@tmpB{LastPages}%
1451       \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1452         \ifx\pagesLTS@hyper\pagesLTS@one%
1453           \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}{%

```

```

1454         {\arabic{pagesLTS.pagenr}}}%
1455         \else \pageref{LastPages}%
1456         \fi%
1457     \else%
1458         \pageref{#1}%
1459     \fi%
1460 \fi%
1461 \fi%
1462 \fi%
1463 \fi%

```

We do not need the temporary definitions any more.

```

1464 \let\pagesLTS@tmpA\undefined%
1465 \let\pagesLTS@tmpB\undefined%
1466 }
1467

```

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<sup>A</sup>T<sub>E</sub>X 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.

```

1468 \newcommand{\@pagesLTS@Prelim@EveryShipout}{%
1469 %% The following code is from the prelim2e package           %%
1470 %% [2009/05/29 v1.3] by Martin Schr\"{o}der (Thanks!):      %%
1471 \bgroup
1472   \dimen\z@=\wd\@cclv
1473   \dimen\@ne=\ht\@cclv
1474   \dimen\tw@=\dp\@cclv
1475   \dimen\thr@@=\dimen1
1476   \advance\dimen\thr@@ by \dimen\tw@
1477   \global\setbox\@cclv\vbox to \dimen\thr@@{%
1478     \hb@xt@\dimen\z@{%
1479       \box\@cclv%
1480       \hss%
1481     }%
1482     \vbox to \z@{%
1483       \hb@xt@\dimen\z@{%
1484         \let\protect\relax
1485 %% 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.

```

1486      \ifx\pagesLTS@pnc\pagesLTS@fns%
1487      \addtocounter{pagesLTS.fnsymbol.cont}{1}%
1488      \ifx\pagesLTS@hyper\pagesLTS@one%
1489      \phantomsection%
1490      \hypertarget{pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.cont}}{}%
1491      \fi%
1492      \ifnum \pagesLTS@esov=\pagesLTS@zero%
1493      \label{pagesLTS.fnsymbol}%
1494      \else%
1495      \overridelabel{pagesLTS.fnsymbol}%
1496      \fi%
1497      \else%
1498      \ifx\pagesLTS@hyper\pagesLTS@one%
1499      \phantomsection%
1500      \fi%
1501      \if@files%
1502      \overridelabel{pagesLTS.\pagesLTS@pnc}%
1503      \immediate\write\@auxout{\string
1504      \undonewlabel{pagesLTS.\pagesLTS@pnc.local}{\on@line}}%
1505      \fi%
1506      \addtocounter{page}{+1}
1507      \pagesLTS@putlabel{pagesLTS.\pagesLTS@pnc.local}{\theCurrentPageLocal}%
1508      \addtocounter{page}{-1}
1509      \fi%
1510 %% Code from prelim2e package again:                %%
1511     }%
1512      \vss%
1513     }%
1514      \vss%
1515     }%
1516      \wd\@cclv=\dimen\z@
1517      \ht\@cclv=\dimen\@ne
1518      \dp\@cclv=\dimen\tw@
1519      \egroup
1520 %% End of code from the prelim2e package.            %%
1521  }
1522

```



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

```
1523 \EveryShipout{%
1524   \ifnum\value{page}>0%
1525     \relax%
1526   \else
1527     \ifnum\value{page}=0%
1528       \PackageWarning{pagesLTS}{%
1529         Counter 'page' is zero!\MessageBreak%
1530         If the page numbering scheme is not arabic\MessageBreak%
1531         and further not extended\MessageBreak%
1532         (see Page counter overflow in the pagesLTS\MessageBreak%
1533         documentation), without other measures\MessageBreak%
1534         this will lead to a counter overflow.\MessageBreak%
1535       }
1536     \else%
1537       \ifnum\value{page}<0%
1538         \PackageWarning{pagesLTS}{%
1539           Counter 'page' is negative: '\the\value{page}'!\MessageBreak%
1540           If the page numbering scheme is not arabic\MessageBreak%
1541           and further not extended\MessageBreak%
1542           (see Page counter overflow in the pagesLTS\MessageBreak%
1543           documentation), without other measures\MessageBreak%
1544           this will lead to a counter overflow.\MessageBreak%
1545         }
1546       \else%
1547         \PackageError{pagesLTS}{%
1548           Counter 'page' does not have a recognized value:\MessageBreak%
1549           '\the\value{page}'\MessageBreak%
1550           \@ehd \MessageBreak%
1551         }
1552       \fi%
1553     \fi%
1554   \fi%
```

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

```
1555 \ifnum \value{CurrentPage}=1% This is the first shipout!
```

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

```
1556 \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.

```
1557 \PackageError{pagesLTS}{pagenumbering missing}{\pagesLTS@messageNPN }%
```

We save the current value of the page,

```
1558      \newcounter{pagesLTS@tmpD}%  
1559      \setcounter{pagesLTS@tmpD}{\value{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}{\value{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] by Heiko Oberdiek (Thanks!). %%
1594 \if@filesw
1595 \begingroup
1596 \let\@number\@firstofone
1597 \ifHy@pageanchor
1598 \ifHy@hypertextnames
1599 \ifHy@plainpages
1600 \def\Hy@temp{\arabic{page}}%
1601 \else
1602 \Hy@unicodedefalse
1603 %% Code not from hyperref package: %%
1604 %% The following lines are modified from the hyperref package. %%
1605 %% Without the modification, after the first shipout "PD1" is %%
1606 %% inserted each time |\pdfstringdef\Hy@temp{\thepage}| is %%
1607 %% executed (if |fnsymbol| is not used). %%
1608 \ifnum \value{CurrentPage}=1%
1609 \ifx\pagesLTS@pnc\pagesLTS@fns%
1610 \pdfstringdef\Hy@temp{\thepage}%
1611 \else%
1612 \def\Hy@temp{\thepage}%
1613 \fi%
```

```

1614         \else%
1615         \pdfstringdef\Hy@temp{\thepage}%
1616         \fi%
1617 %% Code from hyperref package again:                %%
1618         \fi
1619         \else
1620         \def\Hy@temp{\the\Hy@pagecounter}%
1621         \fi
1622         \fi
1623 %% End of code from the hyperref package.            %%
1624 %% (The following four lines are modified             %%
1625 %% from the hyperref package.)                       %%
1626         \immediate\write\@auxout{\string
1627         \newlabel{#1}{\{#\2\}\{ifHy@pageanchor page.\Hy@temp\fi\}}}%
1628         \endgroup%
1629         \fi%
1630     }
1631

```

`\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.

```

1632 \newcommand{\pagesLTS@putlabel}[2]{%
1633     \addtocounter{page}{-1}%

```

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

```

1634     \ifx\pagesLTS@hyper\pagesLTS@one%
1635         \pagesLTS@putlabelhyper{#1}{#2}%
1636     \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.

```

1637     \if@filesw%
1638         \immediate\write\@auxout{\string
1639         \newlabel{#1}{\{#\2\}}}%
1640     \fi%
1641     \fi%

```

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

```

1642     \addtocounter{page}{+1}%
1643 }
1644

```

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

```

1645 \newcommand{\pagesLTS@putlabels}{%
1646     \addtocounter{page}{-1}%
1647     \addtocounter{CurrentPage}{-1}%
1648     \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.

```
1649 \ifx\pagesLTS@pnc\pagesLTS@zero%
1650   \PackageWarning{pagesLTS}{No page numbering scheme found:\MessageBreak%
1651     \pagesLTS@messageNPN }%
```

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

```
1652 \else%
1653   \pagesLTS@writelabel{\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}}%
1654   \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}<2%
1655     \ifx\pagesLTS@pnc\pagesLTS@fns%
1656       \relax%
1657     \else%
1658       \pagesLTS@writelabel{\pagesLTS@pnc}%
1659     \fi%
1660   \fi%
1661 \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).

```
1662 \addtocounter{page}{+1}%
1663 \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:

```
1664 \addtocounter{CurrentPage}{1}%
1665 \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
1666 }
1667
```

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

```
1668 \AtBeginDocument{%
1669   \if@filesw \relax%
1670   \else%
1671     \PackageError{pagesLTS}{No auxiliary file allowed.}%
1672     {The pagesLTS package was not allowed to write to an .aux file.\MessageBreak%
1673       This package does not work without access to an .aux file.\MessageBreak%
1674       Press Ctrl+Z to exit.\MessageBreak%
1675     }%
```

Maybe abortion should be forced?

```
1676    % \endinput
1677    \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).

```
1678    \@ifpackageloaded{endfloat}%
1679    {\@ifpackagelater{endfloat}{1992/03/31}% April 1992 v2.0
1680     {\@ifpackagelater{endfloat}{1995/10/10}{% 1995/10/11 v2.4i
1681      \relax}%
```

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

```
1682    {\PackageWarningNoLine{pagesLTS}{Old endfloat package detected:\MessageBreak%
1683     There is a newer version of the endfloat package available.\MessageBreak%
1684     Please consider updating your version.\MessageBreak%
1685     The pagesLTS package might be incompatible with\MessageBreak%
1686     your current endfloat package.\MessageBreak%
1687     }%
1688    }%
```

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

```
1689    {\PackageError{pagesLTS}{Incompatible, very old endfloat package detected.}%
1690     {The very old version 2.0 (and earlier) of the\MessageBreak%
1691     endfloat package actually redefined the \ enddocument,\MessageBreak%
1692     and so interferred drastically with the LaTeX2e commands\MessageBreak%
1693     which make use of \ AtEndDocument.\MessageBreak%
1694     Newer versions of the endfloat package exists\MessageBreak%
1695     (at least: v2.4i as of 1995/10/11)\MessageBreak%
1696     in modern documentation form,\MessageBreak%
1697     which should be available from CTAN.\MessageBreak%
1698     Please update your endfloat package\MessageBreak%
1699     for use with the pagesLTS package.\MessageBreak %
1700     }%
1701     }%
1702     }%
1703     }{}%
```

It is checked whether the old `lastpage` package was loaded.

(If it was loaded indeed, the `\lastpage@putlabel` is “killed”, see subsection [3.3](#).)

```
1704    \@ifpackageloaded{lastpage}%
1705    {\PackageWarning{pagesLTS}{Incompatible package lastpage detected:\MessageBreak%
1706     Package pagesLTS was loaded, but also the old\MessageBreak%
1707     lastpage package.\MessageBreak%
1708     pagesLTS has all functionality of the lastpage\MessageBreak%
1709     package (and more), so just remove the lastpage\MessageBreak%
```

```

1710     package from your document.\MessageBreak%
1711     pagesLTS will now ''kill'' the lastpage@putlabel\MessageBreak%
1712     command of the lastpage package.\MessageBreak%
1713   }%
1714   \gdef\lastpage@putlabel{\relax}%
1715 }{}%

```

Further it is checked whether the AlphAlph package is loaded.

```

1716 \@ifpackageloaded{alphalph}%
1717   {\PackageInfo{pagesLTS}{Package AlphAlph detected.\MessageBreak%
1718     pagesLTS supports alphalph. Congratulations!\MessageBreak%
1719   }%

```

Unfortunately, \@ifpackageloaded cannot be used any later (cf. L<sup>A</sup>T<sub>E</sub>X 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:

```

1720   \global\def\pagesLTS@AlphAlph{1}%

```

The commands are defined accordingly.

```

1721   \newalphalph{\AlphMult}[mult]{\@Alph}{26}%
1722   \newalphalph{\alphMult}[mult]{\@alph}{26}%
1723   \newalphalph{\fnsymbolmult}[mult]{\@fnsymbol}{5}%
1724 }%

```

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

```

1725   {\ifx\pagesLTS@alphMult\pagesLTS@zero%
1726     \PackageWarning{pagesLTS}{\pagesLTS@messageaMz }%
1727   \else%
1728     \PackageError{pagesLTS}{Package AlphAlph not loaded}%
1729     {Package AlphAlph was not loaded, but package pagesLTS\MessageBreak%
1730       was called without option alphMult=0 (zero).\MessageBreak%
1731       Either load package AlphAlph,\MessageBreak%
1732       or give option alphMult=0 (zero) to the pagesLTS package.\MessageBreak%
1733     }%
1734   \fi%
1735   \ifx\pagesLTS@AlphMulti\pagesLTS@zero%
1736     \PackageWarning{pagesLTS}{\pagesLTS@messageAMiz }%
1737     \relax%
1738   \else%
1739     \PackageError{pagesLTS}{Package AlphAlph not loaded}%
1740     {Package AlphAlph was not loaded, but package pagesLTS\MessageBreak%
1741       was called without option AlphMulti=0 (zero).\MessageBreak%
1742       Either load package AlphAlph,\MessageBreak%
1743       or give option AlphMulti=0 (zero) to the pagesLTS package.\MessageBreak%
1744     }%
1745   \fi%

```

```

1746 \ifpagesLTS@fnsymbolmult%
1747 \PackageError{pagesLTS}{Package AlphAlph not loaded}%
1748 {Package AlphAlph was not loaded, but package pagesLTS\MessageBreak%
1749 was called without option fnsymbolmult=false.\MessageBreak%
1750 Either load package AlphAlph,\MessageBreak%
1751 or give option fnsymbolmult=false to the pagesLTS package.\MessageBreak%
1752 }%
1753 \else%
1754 \PackageWarning{pagesLTS}{\pagesLTS@messagefsmz }%
1755 \fi%
1756 }%

```

Further it is checked whether the hyperref package is loaded.

```

1757 \@ifpackageloaded{hyperref}%
1758 {\PackageInfo{pagesLTS}{Package hyperref detected.\MessageBreak%
1759 pagesLTS supports hyperref. Congratulations!\MessageBreak%
1760 }%
1761 \global\def\pagesLTS@hyper{1}%

```

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

```

1762 \@ifpackagelater{hyperref}{2010/04/16}{\% 2010/04/17 v6.80x
1763 \relax}{\%
1764 \PackageWarningNoLine{pagesLTS}{Old hyperref package detected:\MessageBreak%
1765 There is a newer version of the\MessageBreak%
1766 hyperref package available.\MessageBreak%
1767 Please consider updating your version.\MessageBreak%
1768 }%
1769 }%
1770 %% pagesLTS supports the use of the package hyperref by
1771 %% Heiko Oberdiek (hyperref version 2010/04/17 v6.80x).
1772 %% pagesLTS may work with earlier versions of this packages,
1773 %% but this was not tested.
1774 }%

```

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

```

1775 {\PackageWarning{pagesLTS}{Package hyperref NOT detected.\MessageBreak%
1776 pagesLTS would support hyperref. The page references\MessageBreak%
1777 will NOT be hyperlinked!\MessageBreak }%
1778 }%
1779 }
1780

```



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

```
1781 \AtEndDocument{%
1782   \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. If the old `lastpage` package was detected, we override its `LastPage` label.

```
1783 \clearpage%
1784 \ifx\pagesLTS@pnc\pagesLTS@fns%
1785   \def\pagesLTS@tmpA{\arabic{pagesLTS.fnsymbol.local}}%
1786   \ifnum \pagesLTS@eso=\pagesLTS@tmpA%
1787     \gdef\pagesLTS@rerun{0}%
1788   \else%
1789     \gdef\pagesLTS@rerun{1}%
1790   \fi%
1791   \if@files%
1792     \immediate\write\@auxout{\string
1793       \gdef\string\pagesLTS@eso{\pagesLTS@tmpA}}%
1794   \fi%
1795 \fi%
1796 \pagesLTS@putlabel{LastPage}{\thepage}%
```

We do not need the temporary definition any more.

```
1797 \let\pagesLTS@tmpA\undefined%
1798 }
1799
```

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

```
1800 \AfterLastShipout{%
```

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

```
1801 \if@files%
1802   \immediate\write\@auxout{\string
1803     \setcounter{pagesLTS.fnsymbol.local}{\pagesLTS@esov}}%
1804 \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`.

```
1805 \ifx\pagesLTS@hyper\pagesLTS@one%
1806   \ifx\pagesLTS@pnc\pagesLTS@fns%
1807     \if@files%
1808       \immediate\write\@auxout{\string
1809         \gdef\string\lastpageref{\string\lastpagerefend}}%
1810     \fi%
1811   \fi%
1812 \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:

```

1813 \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}%
1814 \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1815 \value{pagesLTS.current.local.\pagesLTS@pnc}}%

```

And we are one page after the last one (`\AfterLastShipout!`), so we go back one page.

```

1816 \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{-1}
1817 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%
1818 \pagesLTS@ifcounter{pagesLTS.tmpA}%
1819 \setcounter{pagesLTS.tmpA}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%
1820 \addtocounter{pagesLTS.tmpA}{-1}%
1821 \pagesLTS@ifcounter{pagesLTS.tmpB}%
1822 \addtocounter{pagesLTS.tmpB}{\value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.tmpA}.local.count}}%
1823 \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1824 -\value{pagesLTS.tmpB}}%
1825 \fi%
1826 \if@files%
1827 \immediate\write\@auxout{\string
1828 \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}}%
1829 \edef\pagesLTS@tmpA{\arabic{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}}%
1830 \immediate\write\@auxout{\string
1831 \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}{\pagesLTS@tmpA}}%
1832 \let\pagesLTS@tmpA\undefined%
1833 \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.

```

1834 \addtocounter{page}{-1}%
1835 \edef\pagesLTS@tmpA{\thepage}%
1836 \if@files%
1837 \immediate\write\@auxout{\string
1838 \gdef\string\pagesLTS.lastpage{\pagesLTS@tmpA}}%
1839 \fi%
1840 \addtocounter{page}{+1}%
1841 \addtocounter{CurrentPage}{-1}%
1842 \def\pagesLTS@tmpB{\arabic{CurrentPage}}%
1843 \if@files%
1844 \immediate\write\@auxout{\string
1845 \setcounter{pagesLTS.pagenr}{\pagesLTS@tmpB}}%
1846 \fi%
1847 \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.

```
1848 \message{AED: pagesLTS setting VeryLastPage via AfterLastShipout}%
1849 \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.

```
1850 \message{AED: pagesLTS setting LastPages via AfterLastShipout}%
1851 \pagesLTS@putlabels%
```

We do not need the temporary definitions any more.

```
1852 \let\pagesLTS@tmpA\undefined%
1853 \let\pagesLTS@tmpB\undefined%
1854 }
1855
```

`\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. Unfortunately, this hint is presented to the user *before* the list of used files/styles/classes/packages... (of `\listfiles` command), so the user has a chance to miss it.

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.

```
1856 \AtVeryEndDocument{%
1857   \ifx\pagesLTS@rerun\pagesLTS@one%
1858     \PackageWarningNoLine{pagesLTS}{Label(s) may have changed.\MessageBreak%
1859       Rerun to get cross-references right.\MessageBreak%
1860     }%
1861   \fi%
1862 }
1863
1864 \</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:

- $\text{\TeX}$ Format  $\text{\LaTeX}$  2 $\epsilon$ , 1994/06/01, v2 $\epsilon$ : **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, 2010/03/13, v5.3, **CTAN:macros/latex/contrib/geometry/geometry.dtx**

**pagesLTS.sty** The **pagesLTS.sty** for  $\text{\LaTeX}$  2 $\epsilon$  (i.e. all documents using the **pagesLTS** package) requires:

- $\text{\TeX}$ Format  $\text{\LaTeX}$  2 $\epsilon$ , 1994/06/01, v2 $\epsilon$ , **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, 2010/06/03, v1.0b, **CTAN:macros/latex/contrib/muench/undolabl.dtx**  
(submitted, should become available at that location soon)

**lastpage209.sty** The **lastpage209.sty** for  $\text{\LaTeX}$ 209 (i.e. all documents using the **lastpage209** package) requires:

- $\text{\TeX}$ Format  $\text{\LaTeX}$ , v2.09

but only provides the **LastPage** Label - nothing else!

(You can get it also by un-commenting the

```
%% \file{lastpage209.sty}{\from{pagesLTS.dtx}{lastpage209}}%
```

line in the **pagesLTS.ins** file and running

**tex pagesLTS.ins**.)

**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 alphas, 2010/04/18, v2.3, **CTAN:macros/latex/contrib/oberdiek/alphas.dtx**
- package lipsum, 2005/01/26, v1.0, **CTAN:macros/latex/contrib/lipsum/lipsum.dtx**

	<ul style="list-style-type: none"> <li>- package showkeys, 2007/08/07, v3.15, <a href="#">CTAN:macros/latex/required/tools/showkeys.dtx</a></li> <li>- package hyperref, 2010/05/13, v6.81e, <a href="#">CTAN:macros/latex/contrib/hyperref.zip</a></li> <li>- package pagesLTS, 2010/06/03, v1.1b, <a href="#">CTAN:macros/latex/contrib/muench/pagesLTS/pagesLTS.dtx</a> (submitted, should become available at that location soon) (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?)</li> </ul>
papermas	<p>The papermas package is not required, but requires itself the the pagesLTS package and can be considered as kind of add-on. It should become available at CTAN soon:</p> <ul style="list-style-type: none"> <li>- package papermas, 2010/06/03, v1.0b, <a href="#">CTAN:macros/latex/contrib/muench/papermas/papermas.dtx</a></li> </ul>
endfloat	<p>The endfloat package is not required, but because the pagesLTS package is incompatibel 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"> <li>- package endfloat, 1995/10/11, v2.4i, <a href="#">CTAN:macros/latex/contrib/endfloat/endfloat.dtx</a></li> </ul>
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"> <li>- package prelim2e, 2009/05/29, v1.3, <a href="#">CTAN:macros/latex/contrib/ms/prelim2e.dtx</a></li> </ul>
fancyhdr nccfancyhdr	<p>Neither fancyhdr nor nccfancyhdr package is required (the lastpage package used its precessor fancyheadings), but because they were mentioned, also they are listed here:</p> <ul style="list-style-type: none"> <li>- package fancyhdr, 2005/03/22, v3.2, <a href="#">CTAN:macros/latex/contrib/fancyhdr.zip</a></li> <li>- package nccfancyhdr, 2004/12/07, v1.1, <a href="#">CTAN:macros/latex/contrib/ncctools/source/nccfancyhdr.dtx</a></li> </ul>
countlto	<p>As possible alternatives in section 4 there are listed</p>
nofm	
totpages	<ul style="list-style-type: none"> <li>- package countlto, 2009/05/24, v2.1, <a href="#">CTAN:macros/latex/contrib/ms/countlto.dtx</a></li> </ul>
lastpage	<ul style="list-style-type: none"> <li>- package nofm, 1991/02/25, v?., <a href="ftp://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty">ftp://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty</a></li> </ul>
zref	<p>does not work with e.g. hyperref</p> <ul style="list-style-type: none"> <li>- package totpages, 2005/09/19, v2.00, <a href="#">CTAN:macros/latex/contrib/totpages/totpages.dtx</a></li> <li>- package lastpage, 1994/07/20, v0.1b, <a href="#">CTAN:macros/latex/contrib/lastpage/lastpage.dtx</a></li> <li>- package zref, 2010/05/01, v2.17, <a href="#">CTAN:macros/latex/contrib/oberdiek/zref.dtx</a></li> </ul>
Oberdiek	<p>All packages of Heiko Oberdiek’s bundle ‘oberdiek’ (especially holtxdoc, atveryend, kvoptions, alphalph, zref) are also available in a</p>
holtxdoc	<p>TDS compliant ZIP archive:</p>
atveryend	<p><a href="#">CTAN:install/macros/latex/contrib/oberdiek.tds.zip</a>.</p>
kvoptions	<p><b>Warning:</b> holtxdoc, 2010/04/24 v0.19, requires the packages</p>
alphalph	<ul style="list-style-type: none"> <li>- hypdoc, 2010/03/26, v1.9</li> </ul>
zref	

- hyperref, 2010/03/30, v6.80u (latest: 2010/05/13, v6.81e)
- 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.)

## 7.2 Package, unpacking TDS

**Package.** This package should become available soon on CTAN:

CTAN:macros/latex/contrib/muench/pagesLTS/pagesLTS.dtx  
The source file.

CTAN:macros/latex/contrib/muench/pagesLTS/pagesLTS.ins  
The installation file.

CTAN:macros/latex/contrib/muench/pagesLTS/pagesLTS.drv  
The driver to generate the documentation.

CTAN:macros/latex/contrib/muench/pagesLTS/ltxdoc.cfg  
The L<sup>A</sup>T<sub>E</sub>X documentation configuration file, also for generating the documentation.

CTAN:macros/latex/contrib/muench/pagesLTS/pagesLTS.pdf  
The documentation.

CTAN:macros/latex/contrib/muench/pagesLTS/pagesLTS.sty  
The .sty file.

CTAN:macros/latex/contrib/muench/pagesLTS/pagesLTS-example.tex  
The example file.

CTAN:macros/latex/contrib/muench/pagesLTS/pagesLTS-example.pdf  
The compiled example file, as it should look like.

CTAN:install/macros/latex/contrib/muench/pagesLTS/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<sub>E</sub>X:

```
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):

pagesLTS.sty	→ tex/latex/muench/pagesLTS.sty
pagesLTS.pdf	→ doc/latex/muench/pagesLTS.pdf
pagesLTS-example.tex	→ doc/latex/muench/pagesLTS-example.tex
pagesLTS-example.pdf	→ doc/latex/muench/pagesLTS-example.pdf
pagesLTS.dtx	→ source/latex/muench/pagesLTS.dtx
(lastpage209.sty	→ tex/latex/lastpage209.sty for T <sub>E</sub> X209)

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  $\text{T}_{\text{E}}\text{X}$  distribution ( $\text{t}_{\text{E}}\text{X}$ ,  $\text{m}_{\text{ik}}\text{T}_{\text{E}}\text{X}$ ,...) relies on file name databases, you must refresh these. For example,  $\text{t}_{\text{E}}\text{X}$  users run `texhash` or `mktextlsr`.

### 7.4 Some details for the interested

**Unpacking with  $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ .** The `.dtx` chooses its action depending on the format:

**plain  $\text{T}_{\text{E}}\text{X}$ :** Run `docstrip` and extract the files.

**$\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ :** Generate the documentation.

If you insist on using  $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$  for `docstrip` (really, `docstrip` does not need  $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ ), 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 `pdf $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$` :

```
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 Things suggested to be done

- Include a correct checksum for `pagesLTS`.
- Insert the final references where to get the files at [CTAN](#):.



## 9 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 my `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`.

## 10 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\pagesLTS@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`

[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<sup>A</sup>T<sub>E</sub>X209.
- Replacement of `\filedate`, `-version`, `-name`,... because of L<sup>A</sup>T<sub>E</sub>X 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<sub>E</sub>X 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]

- 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.

When you find a mistake or have a suggestion for an improvement of this package, please send an e-mail to the maintainer, thanks!

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

# 11 Index

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