LaTeX/Counters

Counters are an essential part of LaTeX: they allow you to control the numbering mechanism of everything (sections, lists, captions, etc.).

## Counter manipulation

In LaTeX it is fairly easy to create new counters and even counters that reset automatically when another counter is increased (think subsection in a section for example). With the command

|  |
| --- |
| \newcounter{NameOfTheNewCounter} |

you create a new counter that is automatically set to zero. If you want the counter to be reset to zero every time another counter is increased, use:

|  |
| --- |
| \newcounter{NameOfTheNewCounter}[NameOfTheOtherCounter] |

To increase the counter, either use

|  |
| --- |
| \stepcounter{NameOfTheNewCounter} |

or

|  |
| --- |
| \refstepcounter{NameOfTheNewCounter} *% used for labels and cross referencing* |

or

|  |
| --- |
| \addtocounter{NameOfTheNewCounter}{number} |

here the number can also be negative. For automatic resetting you need to use \stepcounter.

To set the counter value explicitly, use

|  |
| --- |
| \setcounter{NameOfTheNewCounter}{number} |

## Counter access[[edit](http://en.wikibooks.org/w/index.php?title=LaTeX/Counters&action=edit&section=2)]

There are several ways to get access to a counter.

* \theNameOfTheNewCounter will print the formatted string related to the counter.
* \value{NameOfTheNewCounter} will return the counter value which can be used by other counters or for calculations. It is not a formatted string, so it cannot be used in text.
* \arabic{NameOfTheNewCounter} will print the formatted counter using arabic numbers.

Note that \arabic{NameOfTheNewCounter} may be used as a value too, but not the others.

Strangely enough, LaTeX counters are *not* introduced by a backslash in any case, even with the \the command. plainTeX equivalents \count and \newcounter\mycounter do abide by the backslash rule.

## Counter style[[edit](http://en.wikibooks.org/w/index.php?title=LaTeX/Counters&action=edit&section=3)]

Each counter also has a default format that dictates how it is displayed whenever LaTeX needs to print it. Such formats are specified using internal LaTeX commands:

|  |  |
| --- | --- |
| **Command** | **Example** |
| \arabic | 1, 2, 3 ... |
| \alph | a, b, c ... |
| \Alph | A, B, C ... |
| \roman | i, ii, iii ... |
| \Roman | I, II, III ... |
| \fnsymbol | Aimed at footnotes; prints a sequence of symbols. |

## LaTeX default counters[[edit](http://en.wikibooks.org/w/index.php?title=LaTeX/Counters&action=edit&section=4)]

* part
* chapter
* section
* subsection
* subsubsection
* paragraph
* subparagraph
* page
* equation
* figure
* table
* footnote
* mpfootnote

For the enumerate environment:

* enumi
* enumii
* enumiii
* enumiv

## Book with parts, sections, but no chapters[[edit](http://en.wikibooks.org/w/index.php?title=LaTeX/Counters&action=edit&section=5)]

Here follows an example where we want to use parts and sections, but no chapters in the book class :

|  |
| --- |
| \renewcommand{\thesection}{\thepart .\arabic{section}}  \part{**My Part**}                                                                 \section{My Section} \subsection{My Subsection} |

## Custom *enumerate*[[edit](http://en.wikibooks.org/w/index.php?title=LaTeX/Counters&action=edit&section=6)]

See the [List Structures](http://en.wikibooks.org/wiki/LaTeX/List_Structures) chapter.

## Custom sectioning[[edit](http://en.wikibooks.org/w/index.php?title=LaTeX/Counters&action=edit&section=7)]

Here is an example for recreating something similar to a section and subsection counter that already exist in LaTeX:

|  |
| --- |
| \newcounter{mysection} \newcounter{mysubsection}[mysection] \addtocounter{mysection}{2} *% set them to some other numbers than 0* \addtocounter{mysubsection}{10} *% same* *%* \arabic{mysection}.\arabic{mysubsection} Blah blah  \stepcounter{mysection} \arabic{mysection}.\arabic{mysubsection} Blah blah  \stepcounter{mysubsection} \arabic{mysection}.\arabic{mysubsection} Blah blah  \addtocounter{mysubsection}{25} \arabic{mysection}.\arabic{mysubsection} Blah blah and more blah blah |