

# The classpack L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> package\*

XML mastering for L<sup>A</sup>T<sub>E</sub>X classes and packages

Literate-programming solution  
for class and package maintenance

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## Summary

L<sup>A</sup>T<sub>E</sub>X document classes and packages are conventionally created, maintained, and distributed in DocT<sub>E</sub>X (.dtx) format using the ltxdoc class, which provides for interleaved code and documentation (‘literate programming’). However, the accurate construction of these files is technically challenging, and editing them is tedious and error-prone.

*ClassPack* allows a developer to create a *DocBook5* XML document for a class or package, containing the documentation and annotated code, and it provides XSLT3 scripts to generate the .dtx, .ins, and other files, which can be combined into a zip file suitable for submission to CTAN.

*This package classpack contains the small typographic adjustments and utilities needed to re-typeset the documentation of classes and packages developed using classpack-dev. It is not used for any other purpose and is not required for using any other class or package, only for the documentation of ClassPack-developed classes and packages.*

**You do not need to install the upcoming development package classpack-dev unless you want to develop classes or packages by using *ClassPack* yourself.**

*ClassPack* is a work-in-progress. A paper describing an earlier version was presented at the Balisage markup conference in Montréal (Flynn, 2013).

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\*This document corresponds to classpack v. 1.19, dated 2020/05/19.

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## Latest changes

### **v.1.19 (2020-05-19)**

- Prefixed local variables with CPK
- CTAN candidate

### **v.1.18 (2020-04-01)**

- Split project into `classpack` and `classpack-dev`
- Replaced `@conformance` with `@YYYY-MM-DD` on all `date` elements in the revision history. This meant a complete regression run after editing all source masters to use this change
- Fixed bug in `makechapapp` where it failed to add the filetype before substringing the full name of the document

### **v.1.17 (2020-03-19)**

- Documentation nearly finished
- Added remaining XSLT files and scripts
- Recoded the distinction between appendixes in the code part and chapters in the files part.

### **v.1.16 (2019-10-20)**

- Documentation ongoing
- Added detection of options on `url` and `xcolor`
- Changed order of packages in `prepost.xml` to prevent option clashes

See p. 22 for earlier changes.

# 1 The *ClassPack* package

*ClassPack* itself is an XML-based class and package development and management system described in the documentation for the `classpack-dev` package. This package, `classpack`, is responsible only for formatting the documentation of classes and packages developed using *ClassPack*.

The only operating  $\LaTeX$  code is therefore the settings and ancillary commands summarised in section 1.1 and documented in section 3 on page 6.

## 1.1 Features

Details of the annotated code are in section 3 on page 6. They cover the following formatting changes:

1. Two-column index instead of three-column
2. Dark Blue colour for annotated code
3. Recalculation of the left-hand margin in documentation to accommodate long variable names
4. Wider space for the section numbers and page numbers in the Table of Contents, and ragged-right setting for section titles to prevent hyphenation
5. Appendixes (used for annotated code for ancillary files) are styled at section level, not chapter level
6. Definitions for the Con $\TeX$ t, X $\TeX$ , and X $\LaTeX$  logos (borrowed from the TUGboat style)
7. Fake small caps (also from TUGboat) for the BiB $\TeX$  logo
8. New struts for adjusting table spacing, and an arrow between examples of menu items in documentation
9. Some hyphenation oddities
10. A fix for the broken description environment item label to stop it overflowing
11. A counter to be used when calculating the number of items in a list

## 2 References

- Flynn, P. (2013). Markup to generate markup to generate markup: Using XML to create and maintain L<sup>A</sup>T<sub>E</sub>X packages and classes, In *Proc. Balisage—The Markup Conference 2013*, Montréal, QC, Balisage Series on Markup Technologies. <http://www.balisage.net/Proceedings/vol10/html/Flynn01/BalisageVol10-Flynn01.html>
- Hagen, H. (2001). *ConT<sub>E</sub>Xt the manual*. 8061GH Hasselt, NL, Pragma-ADE. Retrieved March 27, 2013, from <http://www.pragma-ade.com/general/manuals/cont-eni.pdf>

## 3 The classpack macros and settings

### 3.1 Auto-initialisation

This section is added automatically by *ClassPack* as a preamble to all classes and style packages. The `fixltx2e` package, which used to be included automatically, is no longer preloaded, as its features are now a part of the latest  $\text{\LaTeX} 2_{\epsilon}$  kernel.

The code starts with identity and requirements which are generated automatically as needed by the DocTeX system. For details see the `ltxdoc` package documentation.

```
1 \NeedsTeXFormat{LaTeX2e}[2015/01/01]
2 \ProvidesPackage{classpack}[2020/05/19 v1.19
3   Macros for ClassPack documentation]
```

### 3.2 Packages required for the package

`graphicx` Provide for graphics (PNG, JPG, or PDF format (only) for `pdflatex`; EPS format (only) for standard  $\text{\LaTeX}$ ).

```
4 \RequirePackage{graphicx}%
```

`array` Additional column formatting types for tables.

```
5 \RequirePackage{array}%
```

`url` Handling of URI formatting.

```
6 \RequirePackage{url}%
```

`marginnote` Adds more flexibility to marginal notes.

```
7 \RequirePackage[fulladjust]{marginnote}%
```

### 3.3 Index settings

`IndexColumns` The `doctex` package uses a default three-column index for the documentation, which is too narrow for most purposes. We therefore

make the index in two columns, and space them slightly farther apart. We test first for the existence of the counter, in case this gets used in a document other than a `.dtx` file. No such test is needed for `columnsep` because it is defined in the L<sup>A</sup>T<sub>E</sub>X kernel.

```
8 \ifundefined{c@IndexColumns}{}\setcounter{IndexColumns}{2}}
9 \setlength{\columnsep}{3pc}
```

### 3.4 Annotation settings

`\MacroFont` The `doc` and `docx` packages use the `\MacroFont` command for the marginal labelling of code annotation. We redefine it here to add the colour `DarkBlue` (from the `svgnames` option to the `xcolor` package).

```
10 \def\MacroFont{\fontencoding\encodingdefault
11 \ttfamily\fontseries{m}\fontshape\updefault
12 \small\selectfont\color{DarkBlue}}
```

`\CPKrevmarg` The default margin width is often not wide enough for long macro names, so in the XSLT3 code in `db2dtx.xsl` we find the widest name and add any excess over 25mm to the margin width. Here we define and set the width parameter for this, which will get reset later when calculated. The name has no at-sign, as it operates in user mode.

```
13 \newlength{\CPKrevmarg}
14 \setlength{\CPKrevmarg}{25mm}
```

`\CPKrunningecho` This allows alignment of the current annotation name (from `@xreflabel`) as a reminder in a marginal note in a fake subheading implemented by a `bridgehead` element. Again, no at-sign for a user-mode command.

```
15 \newcommand{\CPKrunningecho}[1]{\leavevmode
16 \marginnote[\sloppy\raggedleft\color{LightGrey}\hspace{0pt}#1]%
17 \marginnote[\sloppy\raggedright\color{LightGrey}\hspace{0pt}#1}%
18 }
19 \let\marginfont\ttfamily
```

## 3.5 Table of Contents

`\l@section` Documentation can sometimes have more than nine subdivisions in sections, subsections, etc, and over 99 pages; and the default widths in the ToC are too narrow for this, so we widen the space for the subsection number by 0.4em:

```
20 \renewcommand*\l@section{%  
21   \@dottedtocline{2}{1.5em}{2.7em}}
```

`\l@subsection` Similarly we increase the subsection number space by 0.4em, and its margin, so they align:

```
22 \renewcommand*\l@subsection{%  
23   \@dottedtocline{3}{4.2em}{3.6em}}
```

`\@pnumwidth` The page number width is set to 3em instead of 1.55em:

```
24 \renewcommand{\@pnumwidth}{3em}
```

`\@tocrmarg` And the right margin space goes up from 2.55em to 3em; the addition of 1fil makes the section titles typeset raggedright, so that hyphenation will not occur.

```
25 \renewcommand{\@tocrmarg}{4em plus1fil}
```

## 3.6 Lower-level sectioning

`\subsubsection` The `\subsubsection` command is used in bridgehead mode, so needs less space above and below.

```
26 \renewcommand\subsubsection{%  
27   \@startsection{subsubsection}{3}{\z@}%  
28   {-1ex\@plus -.25ex \@minus -.25ex}%  
29   {1ex \@plus .25ex}%  
30   {\sffamily\normalsize\bfseries}}
```



### 3.7 Appendix settings

`\appendix` Change the way the appendix command works so that appendixes get section-type styling in documentation.

```
31 \renewcommand\appendix{\par
32   \setcounter{section}{0}%
33   \setcounter{subsection}{0}%
34   \gdef\thesection{\@Alph\c@section}}
```

### 3.8 T<sub>E</sub>X and other logos

T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X are defined in the L<sup>A</sup>T<sub>E</sub>X kernel, but most of the others are not. The following definitions are taken from the `ltugboat` package, used for typesetting the TUGboat journal.

`\ConTeXt` ConT<sub>E</sub>Xt is a typography and typesetting system meant to provide users easy and consistent access to advanced typographical control (Hagen, 2001).

```
35 \def\ConTeXt{C\kern-.0333emon\-\kern-.0667em\TeX
36   \kern-.0333emt}
```

`\tubreflect` Borrow the reflection code from TUGboat.

```
37 \def\tubreflect#1{%
38   \@ifundefined{reflectbox}{%
39     \PackageError{classpack}%
40     {A graphics package must be loaded for \string\XeTeX}%
41     {Add the graphicx package to your Preamble}%
42   }{% otherwise OK
43     \ifdim \fontdimen1\font>0pt
44       \raise 1.75ex \hbox{\kern.1em
45         \rotatebox{180}{#1}}\kern-.1em
46     \else
47       \reflectbox{#1}%
48     \fi
49   }%
50 }
```

`\tubhideheight` Borrow the method of hiding the height from TUGboat as well.

```

51 \def\tubhideheight#1{\setbox0=\hbox{#1}%
52 \ht0=0pt \dp0=0pt \box0 }

```

\XeTeX Define X<sub>q</sub>TeX and X<sub>q</sub>L<sup>A</sup>TeX.

```

53 \DeclareRobustCommand\Xe[1]{\leavevmode
54 \tubhideheight{\hbox{X%
55 \setbox0=\hbox{\TeX}\setbox1=\hbox{E}%
56 \lower\dp0\hbox{\raise\dp1\hbox{%
57 \kern-.125em\tubreflect{E}}}%
58 \kern-.1667em #1}}}
59 \def\XeTeX{\Xe\TeX}

```

\XeLaTeX Define X<sub>q</sub>L<sup>A</sup>TeX using the existing macros.

```

60 \def\XeLaTeX{\Xe{\,\LaTeX}}

```

\SMC Define a new small caps for use in BIB<sub>T</sub>EX, and an error message to go with it (from the ltugboat package).

```

61 \DeclareRobustCommand\SMC{%
62 \ifx\@currsize\normalsize\small\else
63 \ifx\@currsize\small\footnotesize\else
64 \ifx\@currsize\footnotesize\scriptsize\else
65 \ifx\@currsize\large\normalsize\else
66 \ifx\@currsize\Large\large\else
67 \ifx\@currsize\LARGE\Large\else
68 \ifx\@currsize\scriptsize\tiny\else
69 \ifx\@currsize\tiny\tiny\else
70 \ifx\@currsize\huge\LARGE\else
71 \ifx\@currsize\Huge\huge\else
72 \small\SMC@unknown@warning
73 \fi\fi\fi\fi\fi\fi\fi\fi\fi\fi
74 }
75 \newcommand\SMC@unknown@warning{\PackageError{classpack}%
76 {\string\SMC: nonstandard text font size command -- using
77 \string\small}}%
78 {Check the font size or scaling for \the\@currsize}}
79 \newcommand\textSMC[1]{\SMC #1}

```

\BIBTeX Finally, define BIB<sub>T</sub>EX in various forms.

```

80 \def\Bib{%

```

```

81 \ifdim \fontdimen1\font>0pt
82   B{\SMC\SMC IB}%
83 \else
84   \textsc{Bib}%
85 \fi
86 }
87 \def\BibTeX{\Bib\kern-.08em \TeX}
88 \let\BiBTeX\BibTeX
89 \let\BIBTeX\BibTeX

```

### The flexlogo package

The flexlogo package (under development) will make this section obsolete, as it allows for the complete redefining of the  $\TeX$ ,  $\LaTeX$ , and related logos for non-CM fonts.

## 3.9 Formatting additions

`\CPKvstrut` Define a strut that adjusts to the size of type, for use in spacing table headers and footers.

```
90 \newcommand{\CPKvstrut}{\vrule height1.2em depth.6667ex width0pt}
```

`\CPKmenusep` Define a macro to format an arrow between documentary menu items. Probably no longer needed now that the `menukeys` package is available

```
91 \def\CPKmenusep{\thinspace$\rightarrow$\thinspace\allowbreak}
```

`\CPKprestrut` Also a strut to precede paragraph cells...

```
92 \newcommand{\CPKprestrut}{\vrule height1em width0pt}
```

`\CPKpoststrut` ...and one to follow them.

```
93 \newcommand{\CPKpoststrut}{\vrule depth.5ex width0pt}
```

`\hyphenation` Add some hyphenation oddities.

```
94 \hyphenation{ele-ment ele-ments attri-bute attri-butes
95   docu-ment docu-ments primi-tive helico-pter}
```

`\descriptionlabel` Fix the broken description environment item label. This also gets fixed in the `enumitem` package so it will probably go from here next version.

```
96 \renewcommand*\descriptionlabel[1]{%  
97   \hspace\labelsep\sffamily\bfseries #1}
```

`CPKcoref` Add the counter to enable the use of `coref` list counters.

```
98 \newcounter{CPKcoref}
```

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3.
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### A.6.3 How to Use This License

To use this license, place in each of the components of your work both an explicit copyright notice including your name and the year the work was authored and/or last substantially modified. Include also a statement that the distribution and/or modification of that component is constrained by the conditions in this license.

Here is an example of such a notice and statement:

```
%%% pig.dtx
%%% Copyright 2005 M. Y. Name
%%%
%% This work may be distributed and/or modified under the
%% conditions of the LaTeX Project Public License, either version 1.3
%% of this license or (at your option) any later version.
%% The latest version of this license is in
%% http://www.latex-project.org/lppl.txt
%% and version 1.3 or later is part of all distributions of LaTeX
%% version 2005/12/01 or later.
%%
%% This work has the LPPL maintenance status `maintained'.
%%
%% The Current Maintainer of this work is M. Y. Name.
%%
%% This work consists of the files pig.dtx and pig.ins
%% and the derived file pig.sty.
```

Given such a notice and statement in a file, the conditions given in this license document would apply, with the ‘Work’ referring to the three files `pig.dtx`, `pig.ins`, and `pig.sty` (the last being generated from `pig.dtx` using `pig.ins`), the ‘Base Interpreter’ referring to any ‘ $\text{\LaTeX}$ -Format’, and both ‘Copyright Holder’ and ‘Current Maintainer’ referring to the person M. Y. Name.

If you do not want the Maintenance section of LPPL to apply to your Work, change ‘maintained’ above into ‘author-maintained’. However, we recommend that you use ‘maintained’ as the Maintenance section was added in order to ensure that your Work remains useful to the community even when you can no longer maintain and support it yourself.

#### **A.6.4 Derived Works That Are Not Replacements**

Several clauses of the LPPL specify means to provide reliability and stability for the user community. They therefore concern themselves with the case that a Derived Work is intended to be used as a (compatible or incompatible) replacement of the original Work. If this is not the case (e.g., if a few lines of code are reused for a completely different task), then clauses 6b and 6d shall not apply.

#### **A.6.5 Important Recommendations**

**A.6.5.1 Defining What Constitutes the Work :** The LPPL requires that distributions of the Work contain all the files of the Work. It is therefore important that you provide a way for the licensee to determine which files

constitute the Work. This could, for example, be achieved by explicitly listing all the files of the Work near the copyright notice of each file or by using a line such as:

```
%% This work consists of all files listed in manifest.txt.
```

in that place. In the absence of an unequivocal list it might be impossible for the licensee to determine what is considered by you to comprise the Work and, in such a case, the licensee would be entitled to make reasonable conjectures as to which files comprise the Work.

## Change History

v0.71	General: First time this was used to document itself: The title element and subtitle element are now subsumed beneath the generated title in the output..	1
v0.72	General: Wrote internal documentation: Created the classpack.xml template as an example..	1
v0.73	General: Added readme.xml and db2plaintext.xsl: This implements dynamic README generation..	1
v0.74	General: Added experimental autopackage: This implements automated package inclusion based on the markup used by the author..	1
v0.75	General: Added secondary files: Secondary output files possible; reversed usage of role attribute on keywords;.	1
v0.76	General: Modified documentation: Started working on Makefile.	1
v0.77	General: Removed unwanted definitions: classorpackage.	1
v0.78	General: Changed default code color: MacroFont now DarkBlue.	1
v0.79	General: Editorial update: Small corrections.	1
v0.80	General: Moved doc commands from XSLT2: ToC settings and revmarg.	1
v0.81	General: Added more logo commands: XeTeX, XeLaTeX.	1
v0.82	General: Fixed hline bug: Should have been renewcommand not def.	1
v0.9	General: Removed fixltx2e: The code from the fixltx2e package has now been merged into the kernel, so the preload of this package is no longer needed..	1
v0.905	General: Enhanced: Added support for Xe <sub>q</sub> LaTeX.	1
v0.91	General: Regenerated: Recreated package with new classpack code to create zip file to the CTAN standard.	1
v0.915	General: Merged: Merged default packages with author-requested ones..	1
v1.0	General: Tidied up the processing and greatly extended documentation: 1) Rewrote almost all the description of how to create the basic XML file; 2) The RFC2119 Note now automatically includes the relevant BiBTeX entry in the .bib file (done in the Makefile).	1

v1.01	General: Edited out duplications in documentation: 1) Tidied explanations and documented the markup in more detail; 2) Now using Xe <sub>L</sub> LaTeX and biber. . . . . 1	can be included. Also added an omit attribute to the seglistitem elements in the constraintdef element for class packages which specifies that the relevant package is not required for the additional class or package being generated.; 2) Changed the documentation font to Noto.. . . . 1
v1.02	General: Moved specification for babel to pre-options: 1) The babel package is now pre-specified with the PassOptionsToPackage command, to avoid conflicts with options later; 2) Now using Xe <sub>L</sub> LaTeX and biber. . . . . 1	
v1.025	General: README: Title and identity moved to a template and deleted from readme.xml. . . . . 1	
v1.03	General: Bundle identifiers: 1) Added a line to the Makefile to pick out the date of the most-recently-updated file and put it in a file called VERSION (suggestion from Petra Rube-Pugliese at CTAN based on their docs).; 2) Regularised the identity of the version date from a global variable date, rather than working it out each time.. . . . 1	v1.05 General: Maintenance: 1) Updated documentation; 2) Tested additional outputs. . . . . 1
v1.04	General: Reusable code blocks: 1) Added an attribute reuse to the annotation element for use in Appendixes which generate additional LaTeX class or package files, which points at an xml:id attribute on an existing annotation element already used elsewhere so that the same documentation text	v1.06 General: Maintenance release: Rearranged output so that change log and index always get printed. . . . . . . . . . . 1
		v1.07 General: Minor adaptations to quoted chunks of code: Updated to use Xe <sub>L</sub> LaTeX. . . . . 1
		v1.08 General: Moved RFC2119 warning, and did some minor rewording: 1) Removed RFC2119 warning text from db2dtx.xml to rfc2119.xml, creating a section to hold it and the bibliography. Rewrote the templates for bibliolist, biblioentry, bibliography, and section/title to accomodate this.; 2) Ongoing updates and explanation. . . . . . . . . . . 1
		v1.09 General: Skipped the application of headers to appendix files: 1) Files written from the appendix element no longer get the LaTeX headers prepended; 2) The sentinel

	value for comments in scripts now reflects the double hash; 3) Added the remark element to db2md.xsl (with plain para); 4) Ongoing updates and explanation. . . . . 1		
v1.10	General: bold to be plain bold, not bold italic; 3) Changed blockquotes to blue in the PDF, added recognition of xlink:href to give source ack as URI. . . . . 1		Markdown driver for the README to produce code that displays correctly in the Markdown Viewer 3.6 extension for Chrome and conforms to the CTAN rules.; 2) Added details of ClassPack to the MD file header; 3) Some reorganisation of topics; 4) More annotation-level documentation on the XSLT3 code. . . . . 1
v1.11	General: : 1) Fixed numerous bugs in handling of listings; 2) Moved DTD annotations to doc as chapter while logic for appendixes not working properly; 3) Finished PE chunking of db2dtx.xsl and doctexbook-master.dtd; 4) Finished writing the chunk program. . . . . 1	v1.15	General: : 1) Started massive documentation effort on XSLT; 2) Order of templates changed in XSLT. . . . . 1
v1.12	General: : 1) Started tidying up sentinel and fence; 2) Involves rationalising the use of chapter and appendix within part; 3) parameterised a makesentinel, maketermsentinel, and makefence in sect1 but they don't get called because of [2] above; 4) Finished writing the chunk program. . . . . 1	v1.16	General: : 1) Documentation ongoing; 2) Added detection of options on url and xcolor; 3) Changed order of packages in prepost.xml to prevent option clashes. . . . . 1
v1.13	General: : 1) Created commentchar and termcommentchar functions; 2) Untested invocation in sect1 template. . . . . 1	v1.17	General: : 1) Documentation nearly finished; 2) Added remaining XSLT files and scripts; 3) Recoded the distinction between appendixes in the code part and chapters in the files part.. 1
v1.14	General: : 1) Updated the	v1.18	General: : 1) Split project into classpack and classpack-dev; 2) Replaced conformance with YYYY-MM-DD on all date elements in the revision history. This meant a complete regression run after editing all source masters to use this change; 3) Fixed bug in makechapapp where it



failed to add the filetype  
before substringing the full  
name of the document. . . . . 1

v1.19  
General: : 1) Prefixed local  
variables with CPK; 2) CTAN  
candidate. . . . . 1

# Index

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

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