

The xltextra package

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Contents

1	Introduction	2
1.1	Usage	2
2	Features	2
2.1	<code>\textsuperscript</code> and <code>\textsubscript</code>	2
2.2	Inner emphasis	3
2.3	Unicode footnote symbols	3
2.4	Verbatim	3
2.5	Logos	4
2.6	Discretionary hyphenation: <code>\-</code>	4
2.7	Vulgar fractions	4
2.8	Named glyphs	5
2.9	The <code>\showhyphens</code> command	5
I	The xltextra package	6
3	Programmming bits and pieces	6
4	Logos	6
5	ϵ-TeX functionality	7
5.1	Unicode footnote symbols	8
5.2	Emph	8
5.3	<code>\-</code>	8
5.4	Subscript and superscript	8
5.5	Verbatims	12

1 Introduction

This document describes the `xltextra` package. It implements some odds-and-ends features and improved functionality for broken or sub-standard L^AT_EX methods when using the X_YT_EX format.

1.1 Usage

Easy: `\usepackage{xltextra}`. This package automatically loads the following packages: `fixltx2e`, `etex`, `metalogo`, `xunicode`, `fontspec`.

There are some package options to disable various functionality that could clash with other things:

no-sscript Swaps the definitions of `\textsubscript` and `\textsuperscript` with their respective starred versions, as described in section §2.1.

no-emph Disables the redefinition of `\emph` and `\em` described in section §2.2.

no-logos Disables the redefinition of `\TeX`, etc. described in section §2.5, but *does* still define the `\XeTeX` and `\XeLaTeX` logo commands.

no-hyphen Disables the redefinition of `\-` (probably harmless anyway) described in section §2.6.

no-verb Disables the redefinition of `\verb*` and `\begin{verbatim}`, and the patching of various verbatim packages, as described in section §2.4.

2 Features

2.1 `\textsuperscript` and `\textsubscript`

These two macros have been redefined to take advantage, if possible, of actual superior or inferior glyphs in the main document font. This is very important for high-quality typesetting — compare this first example to the third; yes, they are the same font.

<code>\textsuperscript</code>	<code>abcdefghijklmnopqrstuvwxyz1234567890</code>
<code>\textsubscript</code>	<code>abcdefghijklmnopqrstuvwxyz1234567890</code>

But will fall back on ‘faked’ ones if they don’t exist: (this is Didot)

<code>\textsuperscript</code>	<code>abcdefghijklmnopqrstuvwxyz1234567890</code>
<code>\textsubscript</code>	<code>abcdefghijklmnopqrstuvwxyz1234567890</code>

The original definitions are available in starred versions of the commands:

<code>\textsuperscript*</code>	<code>abcdefghijklmnopqrstuvwxyz1234567890</code>
<code>\textsubscript*</code>	<code>abcdefghijklmnopqrstuvwxyz1234567890</code>

But beware fonts lacking the full repertoire: (this is Adobe Jenson Pro)

<code>\textsuperscript</code>	ab ^c de ^f g ^h i ^j k ^l mno ^p q ^r st ^u v ^w x ^y z ¹²³⁴⁵⁶⁷⁸⁹⁰
<code>\textsubscript</code>	ab _c de _f g _h i _j k _l mno _p q _r st _u v _w x _y z ₁₂₃₄₅₆₇₈₉₀

The `[no-sscript]` package option will swap the definitions of the starred and non-starred versions of the commands described above if the new definitions are undesirable.

The macros `\realsubscript`, `\realsuperscript`, `\fakesubscript`, and `\fake-superscript` may be used to access the ‘new’ and ‘old’ functionalities regardless of the `[no-sscript]` package option.

2.2 Inner emphasis

`fixltx2e`’s method for checking for “inner” emphasis is a little fragile in \TeX , because font slant information might be missing from the font. Therefore, we use \LaTeX ’s `NESS` information, which is more likely to be correct.

<i>Nested <code>emphasis</code> is now <code>fixed</code>.</i>	<pre>\renewcommand\eminnershapes{\scshape} \fontspec{Didot} Nested {\em emphasis is \emph{now} fixed.}</pre>
--	--

The `[no-emph]` package option will disable this redefinition.

2.3 Unicode footnote symbols

By default \LaTeX defines symbolic footnote characters in terms of commands that don’t resolve well; better results can be achieved by using specific unicode characters or proper LICRs with the `xunicode` package.

This problem has been solved by loading the `fixltx2e` and `xunicode` packages in `xltxtra`.

2.4 Verbatim

Many verbatim mechanisms assume the existence of a ‘visible space’ character that exists in the `ASCII` space slot of the typewriter font. This character is known in unicode as `U+2434: BOX OPEN`, which looks like this: ‘`□`’.

When a unicode typewriter font is used, \LaTeX no longer prints visible spaces for the `verbatim*` environment and `\verb*` command. `xltxtra` fixes this problem by using the correct unicode glyph, and patches the following packages to do the same: `listings`, `fancyvrb`, `moreverb`, and `verbatim`.

In the case that the typewriter font does not contain ‘`□`’, the Latin Modern Mono font is used as a fallback.

2.5 Logos

This part of the package essentially exists to define the `\XeTeX` and `\XeLaTeX` logos, which need to be tuned according to the font that is used. Originally I had some hard-coded definitions in here, but Andrew Moschou’s `metalogo` package now provides a much more flexible and useful interface to a variety of T_EX-related logos.

Here are some examples. The default:

<code>\TeX</code> <code>\XeTeX</code> <code>\LaTeX</code> <code>\XeLaTeX</code>	<code>\TeX</code> <code>\XeTeX</code> <code>\LaTeX</code> <code>\XeLaTeX</code>
---	---

Notice that it’s a bit tight when not using Computer Modern, for which the logos were designed:

<code>\TeX</code> <code>\XeTeX</code> <code>\LaTeX</code> <code>\XeLaTeX</code>	<code>\usefont{OT1}{cmr}{m}{n}</code> <code>\TeX</code> <code>\XeTeX</code> <code>\LaTeX</code> <code>\XeLaTeX</code>
---	--

These logos, ideally, should be hand-tuned for each font that they’re used in. Please refer to the `metalogo` documentation for more information.

The `[no-logos]` package option will not redefine `\TeX` or `\LaTeX` but will still define `\XeTeX` and `\XeLaTeX`.

2.6 Discretionary hyphenation: `\-`

L^AT_EX defines the macro `\-` to insert discretionary hyphenation points. However, it is hard-coded in L^AT_EX to use the hyphen - character. Since `fontspec` makes it easy to change the hyphenation character on a per font basis, it would be nice if `\-` adjusted automatically — and now it does.

2.7 Vulgar fractions

The `\vfrac` command for setting ‘vulgar’ fractions based on AAT or OpenType font features. Not really recommended for many purposes, depending on your text, but it’s a good example of how to program such things using `fontspec`.

AAT: $\frac{123}{456}$ ICU: $\frac{123}{456}$	<code>\fontspec{Skia}</code> AAT: <code>\vfrac{123}{456}</code> <code>\fontspec{Warnock Pro}</code> ICU: <code>\vfrac{123}{456}</code>
--	---

(This can also be achieved in regular L^AT_EX with either the `nicefrac` or `xfrac` package.)

Only use it when you know it will work; no warnings are given if the font doesn't support the necessary features.

2.8 Named glyphs

Along the way somewhere, X_YTeX added support for selecting glyphs from a TrueType-based OpenType font based on their internal glyph name. Jonathan Kew posted the following definition as a nice interface to it.

¥ [smile]	<code>\fontspec{Charis SIL}</code>
	<code>\namedglyph{yen}</code>
	<code>\namedglyph{smile}</code>

2.9 The `\showhyphens` command

The default definition doesn't work in X_YTeX. A new version, written by Jonathan Kew, is included in this package that *does* work. Minor differences with the original: the showing of hyphens in the console output will be marked with explanatory text. Also, multiple words, separated by commas, will end up in separate instances of 'showing hyphens'.

File I

The **xltextra** package

This is the package implementation.

```
1 \ProvidesPackage{xltextra}
2 [2009/10/25 v0.5a Improvements for the "XeLaTeX" format]
```

Option processing

```
3 \newif\if@xxt@nosscrip@
4 \newif\if@xxt@nologos@
5 \newif\if@xxt@nohyphen@
6 \newif\if@xxt@noemph@
7 \newif\if@xxt@noverb@
8 \DeclareOption{no-sscript}{\@xxt@nosscrip@true}
9 \DeclareOption{no-logos}{\@xxt@nologos@true}
10 \DeclareOption{no-hyphen}{\@xxt@nohyphen@true}
11 \DeclareOption{no-emph}{\@xxt@noemph@true}
12 \DeclareOption{no-verb}{\@xxt@noverb@true}
13 \ProcessOptions*
```

Required packages

```
14 \RequirePackage{ifxetex}
15 \RequireXeTeX
16 \RequirePackage{fontspec}
17 \RequirePackage{xunicode}
```

3 Programmming bits and pieces

4 Logos

\XeTeX The T_EX-related logos people insist upon using need to be tuned on a per-font basis. This package calls upon Andrew Moschou's package `metalogo` for this purpose. To tune the logos to each font, use the commands `\setlogokern`, `\setlogodrop`, etc. Refer to `mathspec`'s documentation for further details.

\XeLaTeX

```

TeX XeTeX LaTeX XeLaTeX
LATεTeX
\setlogokern{Xe}{-0.061em}
\setlogokern{eL}{-0.057em}
\setlogokern{La}{-0.265em}
\setlogokern{aT}{-0.0585em}
\setlogokern{Te}{-0.0575em}
\setlogokern{eX}{-0.072em}
\setlogokern{eT}{-0.056em}
\setlogokern{X2}{0.1667em}
\setlogodrop{0.153em}
\setLaTeXa{\scshape a}
\setLaTeXee{\mbox{\fontspec{Times}\itshape ε}}
TeX\ XeTeX\ LaTeX\ XeLaTeX\ LaTeXε

```

```
18 \RequirePackage{metalogo}
```

The [no-logos] package option might be in effect, in which case `\TeX`, `\LaTeX` and `\LaTeXe` should keep their original definitions (which were saved by `metalogo`).

```

19 \if@xxt@nologos@
20   \let\TeX\original@TeX
21   \let\LaTeX\original@TeX
22   \let\LaTeXe\original@LaTeXe
23 \fi

```

`\TeX@logo@spacing` This macro is now deprecated. It is recommended to use the commands from `metalogo`.

```

24 \newcommand*\TeX@logo@spacing[6]{%
25   \PackageWarning{xltextra}{%
26     Use of \protect\TeX@logo@spacing\space is deprecated,\MessageBreak
27     recommend to use commands from package `metalogo' instead}
28   \setlogokern{Te}{#1}%
29   \setlogokern{eT}{#1}%
30   \setlogokern{eX}{#2}%
31   \setlogokern{Xe}{#2}%
32   \setlogodrop{#3}%
33   \setlogokern{La}{#4}%
34   \setlogokern{aT}{#5}%
35   \setlogokern{eL}{#6}}

```

5 ε -TeX functionality

Because it's just sensible, we load the package that actually allows L^AT_εX to access the extra registers, etc., provided by ε -TeX.

```
36 \RequirePackage{etex}
```

5.1 Unicode footnote symbols

```
37 \RequirePackage{fixltx2e}[2006/03/24]
```

5.2 Emph

```
38 \unless\if@xxt@noemph@
```

`\em` Redefinition of `{\em ...}` and `\emph{...}` to use NFSS info to detect when the
`\emph` inner shape should be used.

```
39 \DeclareRobustCommand\em
40   {\@nomath\em
41     \edef\@tempa{\f@shape}%
42     \edef\@tempb{\itdefault}%
43     \ifx\@tempa\@tempb
44       \emminnershape
45     \else
46       \emshape
47     \fi}
48 \DeclareTextFontCommand{\emph}{\em}
49 \let\emshape\itshape
50 \let\emminnershape\upshape

51 \fi
```

5.3 \-

```
52 \unless\if@xxt@nohyphen@
```

`\-` This macro is courtesy of Frank Mittelbach and the L^AT_EX 2_ε source code.

```
53 \DeclareRobustCommand{\-}{%
54   \discretionary{%
55     \char\ifnum\hyphenchar\font<\z@
56       \xlx@defaultthyphenchar
57     \else
58       \hyphenchar\font
59     \fi}{}}{}
60 \def\xlx@defaultthyphenchar{`\-}

61 \fi
```

5.4 Subscript and superscript

For OpenType fonts, the subscript feature (`subs`) is used, but if that doesn't exist then the scientific inferior feature (`sinf`) is used on the assumption that something's better than nothing. This matches current trends in OpenType font design.

Footnotes are patched to use this better `\textsuperscript`.

$\backslash\text{fakesubscript}$ $\backslash\text{fakesuperscript}$	<p>The old ('fake') methods:</p> <pre> 62 \DeclareRobustCommand*\fakesubscript[1]{% 63 \@textsubscript{\selectfont#1}} 64 \DeclareRobustCommand*\fakesuperscript[1]{% 65 \@textsuperscript{\selectfont#1}}</pre>
$\backslash\text{textsubscript}$ $\backslash\text{textsubscript}^*$ $\backslash\text{textsuperscript}$ $\backslash\text{textsuperscript}^*$	<p>These commands are either defined to create fake or real sub-/super-scripts if they are starred or not, respectively. This swaps if the [no-sscript] package option is in effect. Text subscripts:</p> <pre> 66 \if@xxt@nosscript@ 67 \DeclareRobustCommand*\textsubscript{% 68 \@ifstar{\realsubscript}{\fakesubscript}} 69 \DeclareRobustCommand*\textsuperscript{% 70 \@ifstar{\realsuperscript}{\fakesuperscript}} 71 \else 72 \DeclareRobustCommand*\textsubscript{% 73 \@ifstar{\fakesubscript}{\realsubscript}} 74 \DeclareRobustCommand*\textsuperscript{% 75 \@ifstar{\fakesuperscript}{\realsuperscript}} 76 \fi</pre>
$\backslash\text{realsubscript}$	<pre> 77 \DeclareRobustCommand*\realsubscript[1]{% 78 \begingroup 79 \ifcsname zf@family@fontdef\fontfamily\endcsname 80 \c@zf@script 1818326126\relax 81 \font\zf@basefont="\csname zf@family@fontdef\fontfamily\endcsname" at \fontsize pt 82 \zf@set@font@type 83 \ifzf@icu 84 \zf@check@ot@feat{+subs}% 85 \if@tempswa 86 {\addfontfeature{VerticalPosition=Inferior}#1}% 87 \else 88 \zf@check@ot@feat{+sinf}% 89 \if@tempswa 90 {\addfontfeature{VerticalPosition=ScientificInferior}#1}% 91 \else 92 \fakesubscript{#1}% 93 \fi 94 \fi 95 \else\ifzf@atsui 96 \zf@make@aat@feature@string{10}{2}% 97 \unless\ifx\@tempa\@empty 98 {\addfontfeature{VerticalPosition=Inferior}#1}% 99 \else 100 \fakesubscript{#1}%</pre>

```

101     \fi
102     \fi\fi
103     \else
104         \fakesubscript{#1}%
105     \fi
106 \endgroup}

```

`\realsuperscript` Text superscripts:

```

107 \DeclareRobustCommand*\realsuperscript[1]{%
108     \begingroup
109     \ifcsname zf@family@fontdef\fontfamily\endcsname
110         \c@zf@script 1818326126\relax
111     \font\zf@basefont="\csname zf@family@fontdef\fontfamily\endcsname" at \fontsize pt
112     \zf@set@font@type
113     \ifzf@icu
114         \zf@check@ot@feat{+sup}%
115         \if@tempswa
116             {\addfontfeature{VerticalPosition=Superior}#1}%
117         \else
118             \fakesuperscript{#1}%
119         \fi
120     \else\ifzf@atsui
121         \zf@make@aat@feature@string{10}{1}%
122         \unless\ifx\@tempa\@empty
123             {\addfontfeature{VerticalPosition=Superior}#1}%
124         \else
125             \fakesuperscript{#1}%
126         \fi
127     \fi\fi
128     \else
129         \fakesuperscript{#1}%
130     \fi
131 \endgroup}

```

Patching footnotes:

`\@makefnmark`

```

132 \def\@makefnmark{\mbox{\normalfont\textsuperscript{\@thefnmark}}}

```

`\vfrac` #1: Numerator

#2: Denominator

No error checking is done to ensure that the font actually has the necessary features. Requires the xunicode package for `\textfractionsolidus`.

```

133 \newcommand*\vfrac[2]{%
134     \begingroup
135     \c@zf@script 1818326126\relax

```

```

136 \font\zf@basefont="\csname zf@family@fontdef\fontfamily\endcsname" at \f@size pt
137 \zf@set@font@type
138 \ifzf@icu
139   {\addfontfeature{VerticalPosition=Numerator}#1}%
140   \textfractionsolidus
141   {\addfontfeature{VerticalPosition=Denominator}#2}%
142 \else\ifzf@atsui
143   {\addfontfeature{VerticalPosition=Superior}#1}%
144   \textfractionsolidus
145   {\addfontfeature{VerticalPosition=Inferior}#2}%
146 \fi\fi
147 \endgroup}

```

`\namedglyph` #1: Name of the font glyph to be typeset

```

148 \newcommand\namedglyph[1]{%
149   \@tempcnta=\XeTeXglyphindex "1"\relax
150   \ifnum\@tempcnta>0
151     \XeTeXglyph\@tempcnta
152   \else
153     \xxt@namedglyph@fallback{#1}%
154   \fi}

```

`\xxt@namedglyph@fallback` Redefine this macro to change how glyph names that aren't found get typeset.

```

155 \newcommand\xxt@namedglyph@fallback[1]{[#1]}

```

`\showhyphens` This macro is entirely due to Jonathan Kew. I wish I knew how to write these sorts of things.

```

156 \newbox\xxt@tempbox
157 \def\showhyphens#1{%
158   \typeout{^^J*****}
159   \string\showhyphens:
160   *****}%
161   \@for\@ii:=#1\do{\xxt@showhyphens{\@ii}}%
162   \typeout{^^J*****}
163   *****%
164   *****^^J}}
165 \def\xxt@showhyphens#1{%
166   \setbox\@tempboxa=\vbox{%
167     \hspace{1sp} \hbadness10000 \hfuzz\maxdimen
168     \everypar={} \leftskip\z@ \rightskip\leftskip
169     \pretolerance\m@ne \noindent \hskip\z@ #1\par
170     \global\setbox\xxt@tempbox=\hbox{\xxt@sh@cat}%
171     \setbox\@tempboxa=\hbox to \maxdimen{\unhbox\xxt@tempbox}}
172 \def\xxt@sh@cat{\unskip\unpenalty
173   \setbox\@tempboxa=\lastbox
174   \unless\ifvoid\@tempboxa

```

```

175     \global\setbox\xxt@tempbox=\hbox{%
176         \unhbox\xxt@tempboxa
177         \unskip\unskip
178         \unhbox\xxt@tempbox}%
179     \expandafter\xxt@sh@cat
180     \fi}

```

5.5 Verbatims

Many thanks to Apostolos Syropoulos for discovering this problem and writing the redefinition of L^AT_EX's `verbatim` environment and `\verb*` command.

```

181 \unless\if@xxt@noverb@

```

`\xxt@visiblespace` Print U+2434: OPEN BOX, which is used to visibly display a space character.

```

182 \def\xxt@visiblespace{%
183     \iffontchar\font"2423
184     \expandafter\textvisiblespace
185     \else
186     \expandafter\xxt@visiblespace@fallback
187     \fi}

```

`\xxt@visiblespace@fallback` If the current font doesn't have u2434, use Latin Modern Mono instead.

```

188 \def\xxt@visiblespace@fallback{%
189     \usefont{EU1}{lmtt}{\f@series}{\f@shape}%
190     \textvisiblespace}}

```

`\xxt@vprintspaces` Helper macro to turn spaces active and print visible space instead.

```

191 \begingroup
192     \catcode`\ =\active%
193     \gdef\xxt@vprintspaces{\catcode`\ =\active\let \xxt@visiblespace}%
194 \endgroup

```

`\verb` Redefine `\verb` to use `\xxt@vprintspaces`.

```

\verb*
195 \def\verb{\relax\ifmmode\hbox\else\leavevmode\null\fi
196     \bgroup
197     \verb@eol@error \let\do\@makeother \dospecials
198     \verbatim@font\@noligs
199     \@ifstar\@sverb\@verb}
200 \def\@sverb{\xxt@vprintspaces\@sverb}

```

It's better to put small things into `\AtBeginDocument`, so here we go:

```

201 \AtBeginDocument{%
202     \xxt@patch@verbatim
203     \xxt@patch@moreverb
204     \xxt@patch@fancyvrb
205     \xxt@patch@listings}

```

verbatim* With the verbatim package.

```
206 \def\xxt@patch@verbatim{%
207   \@ifpackageloaded{verbatim}{%
208     \@namedef{verbatim*}{\begingroup\@verbatim\xxt@vprintspaces\verbatim@start}%
209   }{%
    This is for vanilla LaTeX.
210     \@namedef{verbatim*}{\@verbatim\xxt@vprintspaces\@sxverbatim}%
211   }}
```

listingcont* This is for moreverb. The main listing* environment inherits this definition.

```
212 \def\xxt@patch@moreverb{%
213   \@ifpackageloaded{moreverb}{%
214     \@namedef{listingcont*}{%
215       \def\verbatim@processline{%
216         \thelisting@line \global\advance\listing@line1
217         \the\verbatim@line\par}%
218       \@verbatim\xxt@vprintspaces\verbatim@start}%
219     }{}}
```

listings and fancvrb make things nice and easy:

```
220 \def\xxt@patch@fancyvrb{%
221   \@ifpackageloaded{fancyvrb}{%
222     \let\FancyVerbSpace\xxt@visibleSPACE
223   }{}}
224 \def\xxt@patch@listings{%
225   \@ifpackageloaded{listings}{%
226     \let\lst@visibleSPACE\xxt@visibleSPACE
227   }{}}
```

Finish verbatim features:

```
228 \fi
```

Index

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

Symbols	
\-	53
\@@sverb	199, 200
\@empty	97, 122
\@for	161
\@ifpackageloaded	207, 213, 221, 225
\@ifstar	68, 70, 73, 75, 199
\@ii	161
\@makefnmark	132
\@makeother	197
\@namedef	208, 210, 214
\@noligs	198
\@nomath	40
\@sverb	200
\@sxverbatim	210
\@tempa	41, 43, 97, 122
\@tempb	42, 43
\@tempboxa	166, 171, 173, 174, 176
\@tempcnta	149–151
\@textsubscript	63
\@textsuperscript	65
\@thefnmark	132
\@verb	199
\@verbatim	208, 210, 218
\@xxt@noemph@true	11
\@xxt@nohyphen@true	10
\@xxt@nologos@true	9
\@xxt@nosscript@true	8
\@xxt@noverb@true	12
_	192, 193
A	
\active	192, 193
\addfontfeature	86, 90, 98, 116, 123, 139, 141, 143, 145
\advance	216
\AtBeginDocument	201
B	
\begingroup	78, 108, 134, 191, 208
\bgroup	196
C	
\c@zf@script	80, 110, 135
\catcode	192, 193
\char	55
\csname	81, 111, 136
D	
\DeclareOption	8–12
\DeclareRobustCommand	39, 53, 62, 64, 67, 69, 72, 74, 77, 107
\DeclareTextFontCommand	48
\def	60, 132, 157, 165, 172, 182, 188, 195, 200, 206, 212, 215, 220, 224
\discretionary	54
\do	161, 197
\dospecials	197
E	
\edef	41, 42
\else	45, 57, 71, 87, 91, 95, 99, 103, 117, 120, 124, 128, 142, 152, 185, 195
\em	39
\emminershapse	44, 50
\emph	39
\emshape	46, 49
\endcsname	79, 81, 109, 111, 136
\endgroup	106, 131, 147, 194
environments:	
listingcont*	212
verbatim*	206
\everypar	168
\expandafter	179, 184, 186
F	
\f@family	79, 81, 109, 111, 136
\f@series	189
\f@shape	41, 189
\f@size	81, 111, 136
\fakesubscript	62, 68, 73, 92, 100, 104

<code>\fakesuperscript</code>	62, 70, 75, 118, 125, 129		
<code>\FancyVerbSpace</code>	222		
<code>\fi</code>	23, 47, 51, 59, 61, 76, 93, 94, 101, 102, 105, 119, 126, 127, 130, 146, 154, 180, 187, 195, 228		
<code>\font</code>	55, 58, 81, 111, 136, 183		
G			
<code>\gdef</code>	193		
<code>\global</code>	170, 175, 216		
H			
<code>\hbadness</code>	167		
<code>\hbox</code>	170, 171, 175, 195		
<code>\hfuzz</code>	167		
<code>\hsize</code>	167		
<code>\hskip</code>	169		
<code>\hyphenchar</code>	55, 58		
I			
<code>\if@tempswa</code>	85, 89, 115		
<code>\if@xxt@noemph@</code>	6, 38		
<code>\if@xxt@nohyphen@</code>	5, 52		
<code>\if@xxt@nologos@</code>	4, 19		
<code>\if@xxt@nosscript@</code>	3, 66		
<code>\if@xxt@noverb@</code>	7, 181		
<code>\ifcsname</code>	79, 109		
<code>\iffontchar</code>	183		
<code>\ifmmode</code>	195		
<code>\ifnum</code>	55, 150		
<code>\ifvoid</code>	174		
<code>\ifx</code>	43, 97, 122		
<code>\ifzf@atsui</code>	95, 120, 142		
<code>\ifzf@icu</code>	83, 113, 138		
<code>\itdefault</code>	42		
<code>\itshape</code>	49		
L			
<code>\lastbox</code>	173		
<code>\LaTeX</code>	21		
<code>\LaTeXe</code>	22		
<code>\leavevmode</code>	195		
<code>\leftskip</code>	168		
<code>\let</code>	20–22, 49, 50, 193, 197, 222, 226		
<code>\listing@line</code>	216		
<code>\listingcont*</code> (environment)	212		
<code>\lst@visiblespace</code>	226		
M			
<code>\m@ne</code>	169		
<code>\maxdimen</code>	167, 171		
<code>\mbox</code>	132		
<code>\MessageBreak</code>	26		
N			
<code>\namedglyph</code>	148		
<code>\newbox</code>	156		
<code>\newcommand</code>	24, 133, 148, 155		
<code>\newif</code>	3–7		
<code>\noindent</code>	169		
<code>\normalfont</code>	132		
<code>\null</code>	195		
O			
<code>\original@LaTeXe</code>	22		
<code>\original@TeX</code>	20, 21		
P			
<code>\PackageWarning</code>	25		
<code>\par</code>	169, 217		
<code>\pretolerance</code>	169		
<code>\ProcessOptions</code>	13		
<code>\protect</code>	26		
<code>\ProvidesPackage</code>	1		
R			
<code>\realsubscript</code>	68, 73, 77		
<code>\real superscript</code>	70, 75, 107		
<code>\relax</code>	80, 110, 135, 149, 195		
<code>\RequirePackage</code>	14, 16–18, 36, 37		
<code>\RequireXeTeX</code>	15		
<code>\rightskip</code>	168		
S			
<code>\selectfont</code>	63, 65		
<code>\setbox</code>	166, 170, 171, 173, 175		
<code>\setlogodrop</code>	32		
<code>\setlogokern</code>	28–31, 33–35		
<code>\showhyphens</code>	156		
<code>\space</code>	26		
<code>\string</code>	159		
T			
<code>\TeX</code>	20		
<code>\TeX@logo@spacing</code>	24		
<code>\textfractionsolidus</code>	140, 144		

<code>\textsubscript</code>	66	<code>\vfrac</code>	133
<code>\textsubscript*</code>	66		
<code>\textsuperscript</code>	66, 132		
<code>\textsuperscript*</code>	66		
<code>\textvisiblespace</code>	184, 190		
<code>\the</code>	217		
<code>\thelisting@line</code>	216		
<code>\typeout</code>	158, 162		
	U		X
<code>\unhbox</code>	171, 176, 178	<code>\XeLaTeX</code>	6
<code>\unless</code>	38, 52, 97, 122, 174, 181	<code>\XeTeX</code>	6
<code>\unpenalty</code>	172	<code>\XeTeXglyph</code>	151
<code>\unskip</code>	172, 177	<code>\XeTeXglyphindex</code>	149
<code>\upshape</code>	50	<code>\xllx@defaultthyphenchar</code>	56, 60
<code>\usefont</code>	189	<code>\xxt@namedglyph@fallback</code> ...	153, 155
		<code>\xxt@patch@fancyvrb</code>	204, 220
		<code>\xxt@patch@listings</code>	205, 224
		<code>\xxt@patch@moreverb</code>	203, 212
		<code>\xxt@patch@verbatim</code>	202, 206
		<code>\xxt@sh@cat</code>	170, 172, 179
		<code>\xxt@showhyphens</code>	161, 165
		<code>\xxt@tempbox</code>	156, 170, 171, 175, 178
		<code>\xxt@visiblespace</code> ...	182, 193, 222, 226
		<code>\xxt@visiblespace@fallback</code> .	186, 188
		<code>\xxt@vprintspaces</code> <u>191</u> ,	200, 208, 210, 218
	V		Z
<code>\vbox</code>	166	<code>\z@</code>	55, 168, 169
<code>\verb</code>	195	<code>\zf@basefont</code>	81, 111, 136
<code>\verb*</code>	195	<code>\zf@check@ot@feat</code>	84, 88, 114
<code>\verb@eol@error</code>	197	<code>\zf@make@aat@feature@string</code> .	96, 121
<code>verbatim* (environment)</code>	206	<code>\zf@set@font@type</code>	82, 112, 137
<code>\verbatim@font</code>	198		
<code>\verbatim@line</code>	217		
<code>\verbatim@processline</code>	215		
<code>\verbatim@start</code>	208, 218		