

# The L<sup>A</sup>T<sub>E</sub>X fonts bundle

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This self extracting documented file `lxfonts.dtx`, besides the `lxfonts.sty` file, produces the font description files necessary to use the L<sup>A</sup>T<sub>E</sub>X fonts in any document, specifically presentations, but not only. It documents why they were made and the choices made in selecting which fonts to convert to this style.

These fonts should be useful for typesetting documents with T1 encoding (OT1 is also supported) and blends text and math fonts in the proper way; AMS fonts are supported. For legacy reasons the L<sup>A</sup>T<sub>E</sub>X special symbol set is also accordingly restyled.

## 1 The L<sup>A</sup>T<sub>E</sub>X fonts

In the first eighties, when L<sup>A</sup>T<sub>E</sub>X was conceived, Leslie Lamport created a stand alone program, or better, a mark-up S<sup>L</sup>T<sub>E</sub>X format that could be used in place of L<sup>A</sup>T<sub>E</sub>X when it was necessary to create transparencies for conferences, lectures, and presentations; when L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> was made available in the early nineties, that set of mark-up macros and format did not exist any more, and in its place there was the new class *slides*.

The processing of the source files was almost identical, although the new class *slides* had more typesetting power thanks to the L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> more powerful macros.

Both processes produced printed documents that could be photocopied onto methacrylate transparencies and used with overhead projectors.

Since the advent of beamer projectors, that can operate directly from a computer, and the availability of the pdfL<sup>A</sup>T<sub>E</sub>X typesetting program, a set of packages was made available to the T<sub>E</sub>X community so as to produce wonderful presentations, possibly together with their printed handouts, that quickly replaced the old and honorable S<sup>L</sup>T<sub>E</sub>X format and the *slides* class.

The fonts that Leslie Lamport had devised to use with S<sup>L</sup>T<sub>E</sub>X and *slides* had a great advantage over the default T<sub>E</sub>X system fonts, namely the traditional Computer Modern ones, and, after the introduction of the new encoding T1, of the European Computer fonts and, later on, of the Latin Modern vector fonts.

It was *legibility*.

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This advantage was obtained from the sans serif quotation fonts designed by D.E. Knuth himself; he used them to typeset the witty quotations at each chapter end of both his  $\text{T}_{\text{E}}\text{X}$  and  $\text{META}\text{FONT}$  books.

But these Knuthian fonts had a disadvantage: the capital ‘T’ and the lower case ‘l’ were hardly distinguishable from one another and from the absolute value vertical bar. Leslie Lamport solved in part this problem by changing the sans serif ‘T’ with a serified one; this was fine most of the time, but did not solve the similarity of the sans serif lower case ‘l’ with the math absolute value bar.

Moreover when typesetting math in those old fashioned slides, only the `operators` font was changed to a sans serif one, while the `letters` math italics font, together with the other `symbols` normal and `largesymbols` large symbol fonts remained the same; the result was that some math glyphs obtained by juxtaposition of symbols coming from the operator font and some other math font, resulted clearly inadequate.

The solution of such problems consisted in redesigning the shape of the lower case ‘l’, so as to be more similar to an upright italic one, with a curved bottom, and to restyle all the math fonts with the same graphic font settings of the Lamport fonts, both in OT1 and T1 encoding, and in the math encodings OML, OMS OMX, plus the Text Companion TS1 encoded fonts, the  $\mathcal{A}\mathcal{M}\mathcal{S}$  fonts and the  $\text{\LaTeX}$  symbol fonts.

This is all what concerns these extended slide LX fonts; while doing this extensions I had to change the metadescription of several glyphs, but the overall work was not that complicated; it was just heavy because the large number of fonts involved, and therefore the overall glyph number.

This package redefines both the text and math font families; checks if the  $\mathcal{A}\mathcal{M}\mathcal{S}$  fonts have been called for, avoids to redefine the nice glyphs of the  $\mathcal{A}\mathcal{M}\mathcal{S}$  collection with the  $\text{\LaTeX}$  symbol fonts, although it will redefine the latter ones in case the user wants to use them, but did not load the  $\mathcal{A}\mathcal{M}\mathcal{S}$  font collections.

These settings are deferred at begin document time, so that the necessary checks may be used after other fonts are possibly loaded.

As a bonus the typewriter fonts are loaded in a scaled up version so that their x-height matches the larger LX fonts. Such fonts are scaled 25% up so that the 8pt design size typewriter font x-height matches the corresponding height of the LX fonts.

These LX fonts are available in both vector and bitmapped form; I made the whole work by working on the  $\text{META}\text{FONT}$  source files; when I was satisfied with the bitmapped fonts produced with  $\text{META}\text{FONT}$ , I traced them by means of the `mfrtrace` program, by Han-Wen Nienhuys, and produced the `.pfb` files containing the vector description of the glyphs. In order to use them with  $\text{pdfLaTeX}$  it is necessary to have available the `.map` file, that I provided as part of this package. As a consequence of the method I followed, this bundle contains also the `.tfm` metric information

## 2 Usage

The only action needed to use these LX fonts is to call

```
\usepackage{lxfonts}
```

in the preamble; there are no options to set.

If you use *beamer* to create your presentation you might need to specify

```
\usefonttheme{professionalfonts}
```

in order to avoid that beamer resets some math fonts the way it defaults to; for the rest you don't need to follow a particular loading order, although it might be clearer if you loaded your fonts after specifying the input and font encoding(s).

## 3 Standalone usage of the LX fonts

The style file `lxfonts.sty` changes all the default font settings so that you cannot use any other font together with the LX ones.

You can circumvent this rigidity by using the explicit declaration of the font family you want to use; for example, if you called this package and at a certain point you want to typeset something with a serified font, say, the T1 encoded Latin Modern roman font, you can define a macro declaration or explicitly specify:

```
{\usefont{T1}{lmr}{m}{n} Words\ldots words}
```

By so doing the “Words. . . words” will be typeset in roman medium Latin Modern T1 encoded font at the current size

On the opposite if you want to show a sample text written with the LX fonts while you are typesetting with other fonts, you don't use the above .sty file package, but use a macro declaration or the explicit command:

```
{\usefont{T1}{l1cmss}{m}{n} Words\ldots words}
```

and you get `Words. . . words` at the current type size; notice though, how larger the script appears thanks to the larger x-height, but uppercase letters are the same size as the serified ones.

With version 1.0 of this package, this functionality was not possible.

## 4 Integration of the Latin and the Greek scripts

The Greek CB fonts contain also the families and shapes for slides; the style is the same as these LX fonts, but the different script does not require any restyling of any glyph; so they can be used directly; but the script changing mechanism simply implies the change of the encoding; therefore in order to use the above Greek CB fonts, it is simply necessary to have available new font description files whose name is the agglutination of the Greek encoding name (in lower case) with

the family name (identical to that of the Latin script); the contents of such files, of course, retrieves the glyphs from the Greek fonts files.

Therefore it should not be difficult in a presentation to specify the Greek language in the preamble of the source file, and use the *babel* language switching commands to as to write something like this:  $\text{Καλ' ημερα!}$  means *Good day!*.

## 5 The LX fonts demo presentation

This bundle, besides this documentation, is shipped with a demo presentation where most features of the LX fonts are shown; the slides clearly show the features of these fonts, both the positive and negative ones. The *legibility*, in my opinion, is excellent; if it was not for this point I would not have undertaken the work of restyling all these fonts. But there are also some little glitches that are partly inherent to the chosen one-size continuously scalable font. Moreover the Greek fonts, which are not part in themselves of my LX project, requires some adjustments in several kerning values, but at the moment it is acceptable, even if its kerning is not perfect.

While typesetting math it is clearly noticeable the lack of optical sizes: the super and subscripts appear definitely of the right size, but their scaling makes them appear lighter than they should be; this is common with all fonts that come in one size only, and this happens with the majority of the Type 1 fonts distributed with the  $\text{T}_{\text{E}}\text{X}$  system.

The Greek font kerning adjustment is on my TODO list.

## 6 Acknowledgements

I would like to thank all the users who appreciated these fonts and gave me some feedback remarking some glitches; in particular I would like to acknowledge the interaction with Günter Milde, who gave me precious suggestions, among which that of detaching the font description files from the `lxfonts.sty` file.

## 7 Documented code

### 7.1 The package code

The settings relative to the LX fonts are deferred to the `\AtEndPreamble` hook (defined by package `etoolbox`) so that any previous font setting is replaced by the ones relative to the LX fonts; this is particularly useful when preparing source files for a presentation; in this way all the fonts connected to the the slide show will be homogeneously styled the same way.

Of course this is not a serious drawback in other situations, since I have shown in section ?? what to do in order to overcome this apparent limitation.

First I test if certain packages have been loaded, specifically packages *latexsym* and *amsfonts*; if so, certain switches are set `true`. At the proper point these

switches will be used in order to load or to avoid to load certain font description files that will supersede the ones called by such named packages.

At the same time the text and math defaults are set or reset so as to use only the LX fonts.

```

1 \NeedsTeXFormat{LaTeX2e}[2001/06/01]
2 \ProvidesPackage{lxfonts}[2013/09/03 v,2.0 Macros for using LX fonts]
3 \newif\if@lasy \@lasyfalse
4 \newif\if@AMSfonts \@AMSfontsfalse
5 \RequirePackage{etoolbox}
6 \AtEndPreamble{%
7 \@ifpackageloaded{latexsym}{\@lasytrue}{}
8 \@ifpackageloaded{amsfonts}{\@AMSfontstrue}{}
9 \def\rmdefault{llcmss}      % no roman
10 \def\sfdefault{llcmss}
11 \def\ttdefault{llcmtt}
12 \def\itdefault{s1}
13 \def\sldefault{s1}
14 \def\bfdefault{bx}
15 \SetSymbolFont{operators}{normal}{OT1}{llcmss}{m}{n}
16 \SetSymbolFont{letters}{normal}{OML}{llcmm}{m}{it}
17 \SetSymbolFont{symbols}{normal}{OMS}{llcmsy}{m}{n}
18 \SetSymbolFont{largesymbols}{normal}{OMX}{llcmex}{m}{n}
19
20 \SetSymbolFont{operators}{bold}{OT1}{llcmss}{bx}{n}
21 \SetSymbolFont{letters}{bold}{OML}{llcmm}{bx}{it}
22 \SetSymbolFont{symbols}{bold}{OMS}{llcmsy}{bx}{n}
23 \SetSymbolFont{largesymbols}{bold}{OMX}{llcmex}{m}{n} % no bold!
24
25 \DeclareSymbolFontAlphabet{\mathrm}{operators}
26 \DeclareSymbolFontAlphabet{\mathnormal}{letters}
27 \DeclareSymbolFontAlphabet{\mathcal}{symbols}
28
29 \DeclareMathAlphabet{\mathbf}{OT1}{llcmss}{bx}{n}
30 \DeclareMathAlphabet{\mathsf}{OT1}{llcmss}{m}{n}
31 \DeclareMathAlphabet{\mathit}{OT1}{llcmss}{m}{s1}
32 \DeclareMathAlphabet{\mathtt}{OT1}{llcmtt}{m}{n}
33
34 \SetMathAlphabet\mathsf{bold}{OT1}{llcmss}{bx}{n}
35 \SetMathAlphabet\mathit{bold}{OT1}{llcmss}{bx}{s1}

```

The following tests are needed to load the  $\mathcal{A}\mathcal{M}\mathcal{S}$  and the  $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$  symbols fonts; in order to use them it is necessary to input the relevant font description files subject to the switches status; and then it is necessary to redeclare the math fonts accordingly.

The `\Join` and `\leadsto` characters had to be redefined or declared to be aliases of some particular symbol command; the `\Join` macro had to be redefined because the dimensions of the new font don't agree with the kerning fixed in the `amssymb` package; of course, while I was at it, I might have designed a real glyph for `\Join`, but I thought that it was better to avoid conflicts with the existing  $\mathcal{A}\mathcal{M}\mathcal{S}$

symbol definitions. The `\leadsto` character has been let to `\rightsquigarrow` in order to name the same glyph also with the  $\text{\LaTeX}$  symbols font command. In this way it is possible to avoid loading the  $\text{\LaTeX}$  symbols font if the  $\mathcal{A}\mathcal{M}\mathcal{S}$  fonts have been already loaded.

```

36 \if@AMSFonTS
37 \input{ulmsa.fd}
38 \input{ulmsb.fd}
39 \SetSymbolFont{AMSa}{normal}{U}{lmsa}{m}{n}
40 \SetSymbolFont{AMSb}{normal}{U}{lmsb}{m}{n}
41 \xdef\Join{\mathrel{\mathchar"0\hexnumber@\symAMSb 6F%
42 \mkern-14.2mu\mathchar"0\hexnumber@\symAMSb 6E}}
43 \global\let\leadsto\rightsquigarrow
44 \fi
45 \if@lasy
46 \if@AMSFonTS%
47 \PackageWarning{lxfonTS}{%
48 I did not load the LaTeX symbol fonts\MessageBreak
49 because its glyphs are already provided by the AMS fonts\MessageBreak}
50 \else
51 \input{ulllasy.fd}
52 \SetSymbolFont{lasy}{normal}{U}{lllasy}{m}{n}
53 \SetSymbolFont{lasy}{bold}{U}{lllasy}{b}{n}
54 \fi
55 \fi

```

The following commands are defined so as to implement part of the functionality of the old  $\text{\LaTeX}$  209 ones, with some significant modification: their effects are cumulative as they are in  $\text{\LaTeX}$  2 $\epsilon$ ; at the same time they can be used also in mathematics. These commands pamper those users who think that the  $\text{\LaTeX}$  2 $\epsilon$  commands are too lengthy to write, but such users forgot that the old commands did not cumulate their effects, therefore they are not as flexible as the  $\text{\LaTeX}$  2 $\epsilon$  font commands. On the opposite these definitions produce the same cumulative effects as the  $\text{\LaTeX}$  2 $\epsilon$  commands; I do not think the habit of using the old commands is correct, but it does not harm anybody who has correct habits: it's not compulsory to use them even if they are available.

```

56 \DeclareOldFontCommand{\rm}{\rmfamily}{\mathrm}
57 \DeclareOldFontCommand{\sf}{\sffamily}{\mathsf}
58 \DeclareOldFontCommand{\tt}{\ttfamily}{\mathtt}
59 \DeclareOldFontCommand{\bf}{\bfseries}{\mathbf}
60 \DeclareOldFontCommand{\it}{\itshape}{\mathit}
61 \DeclareOldFontCommand{\sl}{\slshape}{\relax}
62 \DeclareOldFontCommand{\sc}{\scshape}{\relax}
63 }

```

## 7.2 Fonts in OT1 encoding

As long as the maths fonts are arranged the way they are, it is necessary to have the OT1 encoded text fonts even if the user specifies the T1 option to the *fontenc*

package; this is due to the fact that the `operators` font in math mode is always defined as the the OT1 encoded set.

At the same time those who don't need to use the many diacritics taken care of by the T1 encoded fonts, can simply avoid to call the `fontenc` package, and get along without any problem.

```

64 \DeclareFontFamily{OT1}{l1cmss}{\hyphenchar\font45}
65 \DeclareFontShape{OT1}{l1cmss}{m}{n}{<-> l1cmss8}{}
66 \DeclareFontShape{OT1}{l1cmss}{m}{sl}{<-> l1cmssi8}{}
67 \DeclareFontShape{OT1}{l1cmss}{m}{it}{<->ssub* l1cmss/m/sl}{}
68 \DeclareFontShape{OT1}{l1cmss}{bx}{n}{<-> l1cmssb8}{}
69 \DeclareFontShape{OT1}{l1cmss}{bx}{sl}{<-> l1cmssso8}{}
70 \DeclareFontShape{OT1}{l1cmss}{bx}{it}{<->ssub* l1cmss/bx/sl}{}
71 %
72 \DeclareFontShape{OT1}{l1cmss}{m}{ui}{<-> ssub* l1cmss/m/n}{}
73 \DeclareFontShape{OT1}{l1cmss}{bx}{ui}{<->ssub* l1cmss/bx/n}{}

```

The typewriter fonts are loaded as the usual OT1 encoded Computer Modern ones just scaled up by 25% so as to have them with the same x-height as the LX fonts. Substitutions are provided for the missing shapes and series.

```

74 \DeclareFontFamily{OT1}{l1cmtt}{\hyphenchar\font\m@ne}
75 \DeclareFontShape{OT1}{l1cmtt}{m}{n}{<-> [1.25]cmtt8}{}
76 \DeclareFontShape{OT1}{l1cmtt}{m}{it}{<-> [1.25]cmti8}{}
77 \DeclareFontShape{OT1}{l1cmtt}{m}{sl}{<-> ssub* l1cmtt/m/it}{}
78 \DeclareFontShape{OT1}{l1cmtt}{bx}{n}{<-> ssub* l1cmtt/m/n}{}
79 \DeclareFontShape{OT1}{l1cmtt}{bx}{it}{<-> ssub* l1cmtt/m/it}{}
80 \DeclareFontShape{OT1}{l1cmtt}{bx}{sl}{<-> ssub* l1cmtt/m/it}{}

```

### 7.3 Fonts in T1 encoding

The T1 encoded fonts are now described by the suitable font description files; such fonts are essential for typesetting most languages that use the Latin script. Actually I know that there exist some languages that usually don't use diacritics; but even in such languages sometimes it is necessary to typeset a foreign name or to typeset some phrases or paragraphs in an ancient version of the same language and diacritics pop up again. Personally I believe that T1 encoded fonts should be the only ones to be used, unless the user has access to suitable UNICODE encoded OpenType fonts, but this is out of topic since these LX fonts can be used only by pdfLaTeX, that cannot directly handle OpenType fonts.

```

81 \DeclareFontFamily{T1}{l1cmss}{\hyphenchar\font45}
82 \DeclareFontShape{T1}{l1cmss}{m}{n}{<-> leclq8}{}
83 \DeclareFontShape{T1}{l1cmss}{m}{sl}{<-> lecli8}{}
84 \DeclareFontShape{T1}{l1cmss}{m}{it}{<->ssub* l1cmss/m/sl}{}
85 \DeclareFontShape{T1}{l1cmss}{bx}{n}{<-> leclb8}{}
86 \DeclareFontShape{T1}{l1cmss}{bx}{sl}{<-> leclo8}{}
87 \DeclareFontShape{T1}{l1cmss}{bx}{it}{<->ssub*l1cmss/bx/sl}{}
88 %
89 \DeclareFontShape{T1}{l1cmss}{m}{ui}{<->ssub*l1cmss/m/n}{}
90 \DeclareFontShape{T1}{l1cmss}{bx}{ui}{<->ssub*l1cmss/bx/n}{}

```

In this case of T1 encoded typewriter fonts I don't use any magnification, as it was done for the OT1 encoded ones, because the upright font exists at the design size of 8pt, but the italic one does not; therefore for homogeneity I thought it was better to use them at a design size of 10pt without any scaling. The differences are so tiny, that are invisible at naked eye. But since the `lcm` family is already defined as a standard family, we need a different family name in order to avoid confusion; this is because we use a single size to be enlarged or shrunk as it is done with the main text font.

```

91 \DeclareFontFamily{T1}{lcm}{\hyphenchar\font\m@ne}
92 \DeclareFontShape{T1}{lcm}{m}{n}{<-> ec-lm10}{}
93 \DeclareFontShape{T1}{lcm}{m}{it}{<-> ec-lmtti10}{}
94 \DeclareFontShape{T1}{lcm}{m}{sl}{<-> ssub* lcm/m/it}{}
95 \DeclareFontShape{T1}{lcm}{bx}{n}{<-> ssub* lcm/m/n}{}
96 \DeclareFontShape{T1}{lcm}{bx}{it}{<-> ssub* lcm/m/it}{}
97 \DeclareFontShape{T1}{lcm}{bx}{sl}{<-> ssub* lcm/m/it}{}

```

## 7.4 Fonts in TS1 encoding

The Text Companion fonts are also restyled so that these font must be redeclared in case the user wants to use them.

```

98 \DeclareFontFamily{TS1}{lcmss}{\hyphenchar\font45}
99 \DeclareFontShape{TS1}{lcmss}{m}{n}{<-> ltclq8}{}
100 \DeclareFontShape{TS1}{lcmss}{m}{sl}{<-> ltcli8}{}
101 \DeclareFontShape{TS1}{lcmss}{m}{it}{<-> ssub*lcmss/m/sl}{}
102 \DeclareFontShape{TS1}{lcmss}{bx}{n}{<-> ltclb8}{}
103 \DeclareFontShape{TS1}{lcmss}{bx}{sl}{<-> ltclo8}{}
104 \DeclareFontShape{TS1}{lcmss}{bx}{it}{<-> ssub*lcmss/bx/sl}{}
105 \DeclareFontShape{TS1}{lcmss}{m}{ui}{<-> ssub*lcmss/m/n}{}
106 \DeclareFontShape{TS1}{lcmss}{bx}{ui}{<-> ssub*lcmss/bx/n}{}

```

## 8 Math fonts and special fonts

### 8.1 Math fonts in OML encoding

The math italic letters font has been restyled as the text fonts.

```

107 \DeclareFontFamily{OML}{lcm}{\skewchar\font'177}
108 \DeclareFontShape{OML}{lcm}{m}{it}{<-> lcmi8}{}
109 \DeclareFontShape{OML}{lcm}{bx}{it}{<-> lcmib8}{}
110
111 \DeclareFontFamily{OML}{lcmss}{}
112 \DeclareFontShape{OML}{lcmss}{m}{n}{<-> ssub*lcm/m/it}{}

```

### 8.2 Math fonts in OMS encoding

The math symbol font was restyled as the text fonts.

```

113 \DeclareFontFamily{OMS}{lcm}{\skewchar\font'60}
114 \DeclareFontShape{OMS}{lcm}{m}{n}{<-> lcm8}{}

```



```

115 \DeclareFontShape{OMS}{l1cmssy}{bx}{n}{<-> l1cmssy8}{}
116
117 \DeclareFontFamily{OMS}{l1cmss}{\skewchar\font'60}
118 \DeclareFontShape{OMS}{l1cmss}{m}{n}{<->ssub*l1cmss/m/n}{}

```

### 8.3 Math fonts in OMX encoding

The large operators and delimiters font was restyled as the text fonts.

```

119 \DeclareFontFamily{OMX}{l1cmex}{}
120 \DeclareFontShape{OMX}{l1cmex}{m}{n}{<-> sfixed* l1cmex8}{}

```

### 8.4 The $\mathcal{AMS}$ fonts

Since the  $\mathcal{AMS}$  fonts are used so often, either directly or through the *amssymb* package, I restyled both families *msam* and *msbm*. In the .sty file I kept the math group names the same so that the symbol definitions keep making reference to the same encoding and slot positions, but they take the glyphs from different files.

In both cases the `\DeclareFontFamily` statement appears to be unnecessary because these font description files are loaded only if the *amsfonts* package has been called. But we have seen above that these font description files are reloaded at the `\AtEndPreamble` hook; moreover if these fonts are used as standalone ones, the declaration is absolutely necessary.

```

121 \DeclareFontFamily{U}{lmsa}{}
122 \DeclareFontShape{U}{lmsa}{m}{n}{<-> lmsam8}{}
123 \DeclareFontShape{U}{lmsa}{bx}{n}{<-> ssub* lmsa/m/n}{}

124 \DeclareFontFamily{U}{lmsb}{}
125 \DeclareFontShape{U}{lmsb}{m}{n}{<-> lmsbm8}{}
126 \DeclareFontShape{U}{lmsb}{bx}{n}{<-> ssub* lmsb/m/n}{}

```

### 8.5 The $\LaTeX$ symbol fonts

The same treatment is used for the  $\LaTeX$  symbol fonts as it was done with the teletype text font: a different family name, but one font to be enlarged or shrunk as the main text font..

```

127 \DeclareFontFamily{U}{l1lasy}{}
128 \DeclareFontShape{U}{l1lasy}{m}{n}{<-> l1lasy8}{}
129 \DeclareFontShape{U}{l1lasy}{b}{n}{<-> l1lasyb8}{}

```

### 8.6 The Greek font for slides

The CB Greek font collection contains also the family and shape of the slides fonts; of course with the Greek script there is no problem with possible confusions of capital ‘I’ and lower case ‘l’, therefore they did not need any restyling. The only question related to Greek fonts is that the same font family names for the Latin Script must be associated with the Greek script with the Greek encoding LGR, instead of the Latin encoding T1. The Greek font description files, therefore, have

a different prefix (LGR), the same family name (lcmss for proportional sans serif fonts, or lcmtt for monospaced ones), but the glyphs are taken from the relevant Greek fonts.

```

130 \DeclareFontFamily{LGR}{lcmss}{\hyphenchar\font45}
131 \DeclareFontShape{LGR}{lcmss}{m}{n}{<-> glmn0800}{}
132 \DeclareFontShape{LGR}{lcmss}{m}{sl}{<-> glmo0800}{}
133 \DeclareFontShape{LGR}{lcmss}{m}{it}{<-> ssub* lcmss/m/sl}{}
134 \DeclareFontShape{LGR}{lcmss}{bx}{n}{<-> glxn0800}{}
135 \DeclareFontShape{LGR}{lcmss}{bx}{sl}{<-> glxo0800}{}
136 \DeclareFontShape{LGR}{lcmss}{bx}{it}{<-> ssub* lcmss/bx/sl}{}
137 \DeclareFontShape{LGR}{lcmss}{m}{ui}{<-> ssub* lcmss/m/n}{}
138 \DeclareFontShape{LGR}{lcmss}{bx}{ui}{<-> ssub* lcmss/bx/n}{}

```

The same action is taken for the teletype fonts, even if it is less probable that such fonts are used in a presentations, since the teletype font is normally used for typesetting programming code texts, very seldom written in Greek.

```

139 \DeclareFontFamily{LGR}{lcmtt}{\hyphenchar\font\m@ne}
140 \DeclareFontShape{LGR}{lcmtt}{m}{n}{<-> gltn1000}{}
141 \DeclareFontShape{LGR}{lcmtt}{m}{it}{<-> glto1000}{}
142 \DeclareFontShape{LGR}{lcmtt}{m}{sl}{<-> ssub* lcmtt/m/it}{}
143 \DeclareFontShape{LGR}{lcmtt}{bx}{n}{<-> ssub* lcmtt/m/n}{}
144 \DeclareFontShape{LGR}{lcmtt}{bx}{it}{<-> ssub* lcmtt/m/it}{}
145 \DeclareFontShape{LGR}{lcmtt}{bx}{sl}{<-> ssub* lcmtt/m/it}{}

```

## 8.7 The map file

The map file is necessary in order to reconfigure the `updmap.cfg` so as to let `pdftex` access these fonts. Notice that this reconfiguration is done by the system installation macros and the user should not play around with such delicate questions; it must be remarked also that the methods for reconfiguring that file are being updated in a significant way in certain distribution of the  $\TeX$  system, and it would be very dangerous to describe the 2013 procedure, when it possible that in 2014 it is a different one. In any case the user who really needs to install these fonts “by hand” is advised to read the documentation of his/her current distribution of the  $\TeX$  system so as to perform the update map correct configuration procedure.

```

146 lcmbsy8   lcmbsy8   <lcmbsy8.pfb
147 lcmex8   lcmex8   <lcmex8.pfb
148 lcmmi8   lcmmi8   <lcmmi8.pfb
149 lcmuib8   lcmuib8   <lcmuib8.pfb
150 lcmsy8   lcmsy8   <lcmsy8.pfb
151 leclb8   leclb8   <leclb8.pfb
152 lecli8   lecli8   <lecli8.pfb
153 leclo8   leclo8   <leclo8.pfb
154 leclq8   leclq8   <leclq8.pfb
155 llasy8   llasy8   <llasy8.pfb
156 llasyb8  llasyb8   <llasyb8.pfb
157 llcmsg8  llcmsg8   <llcmsg8.pfb
158 llcmsgsb8 llcmsgsb8 <llcmsgsb8.pfb

```

```
159 llcmssi8 llcmssi8 <llcmssi8.pfb
160 llcmssso8 llcmssso8 <llcmssso8.pfb
161 lmsam8 lmsam8 <lmsam8.pfb
162 lmsbm8 lmsbm8 <lmsbm8.pfb
163 ltclb8 ltclb8 <ltclb8.pfb
164 ltcli8 ltcli8 <ltcli8.pfb
165 ltclo8 ltclo8 <ltclo8.pfb
166 ltclq8 ltclq8 <ltclq8.pfb
```

The Greek CB fonts need not to be listed in this map file, because they are already listed in the CB font map file that is being already used in the installation of that Greek font collection.