Gentium for TEX

Mojca Miklavec Pavel Farář Thomas A. Schmitz Karl Berry

9th July 2019

Abstract

This document outlines the TEX/LATEX/ConTEXt support provided by this package, gentium-tug, for the Gentium font collection released by SIL.

Contents

1 Introduction

This document explains how to use the TEX/LATEX/ConTEXt support in the present package for the Gentium font collection developed by SIL. This package includes fonts in PostScript Type 1 format converted from the original TrueType files released by SIL (using the FontForge routines found in this package). These Type 1 fonts use the name 'Gentium' by permission of SIL to the TEX Users Group. Therefore the name of this TEX package, by request of SIL, is gentium-tug. Its home page is `https://tug.org/gentium`.

Further information about the fonts themselves can be found in the included documentation and at `https://scripts.sil.org/gentium`. The fonts are released under the SIL Open Font License. For details, see `ofl.txt`

and ofl-faq.txt. (In the event of releasing modified versions of the fonts, either TrueType or Type 1, it's required to use a name that doesn't include "Gentium", per the OFL.)

This TEX/LATEX/ConTEXt support package consists of metrics, map files, style files, documentation, and so on. These files are released under the Expat license. The text for both licenses is included at the end of this document, and in files in the distribution.

If you have the package installed and just want to know how to use Gentium in your TEX documents, feel free to skip to section 4.2 (LATEX usage) or section 4.3 (ConTEXt usage).

Please report any problems (contact info on the web page). If you can also send a fix, so much the better.

2 Gentium collection background

This package uses the original fonts GentiumPlus to make the regular and italic styles and GentiumBasic to make the bold and bold italic styles, and combines them into one TEX-world family.

GentiumPlus is a serif family designed to support a wide range of Latin, Greek and Cyrillic characters. It currently includes just the regular and italic style, as well as smallcaps.

GentiumBasic has just the Latin characters and it even lacks some Latin characters found in GentiumPlus. Therefore, the bold and bold italic styles of this package support fewer languages than the regular and italic styles (e.g. Czech and Slovak are not fully supported). Moreover, GentiumBasic has no smallcaps and no kerning pairs. When and if SIL releases bold and bold italic GentiumPlus fonts, we will switch to those, of course.

This package does not use the Berry fontname scheme, but longer names similar to those of Latin Modern, etc. One disadvantage of this choice is that you cannot use the additional font selection commands provided by the package nfssext-cfr.

3 Installation

If you are using a reasonably recent MiKTEX or TEX Live or distro installation it should be enough to install the gentium-tug package (if it's not already present).

Otherwise, or if you want to install the font manually, you will in general need to perform these steps:

1. choose whether to install the font system-wide or in a personal directory;
2. move or copy the package files to the appropriate location;
3. refresh the TEX database;
4. incorporate the included map file fragments for the different engines.

However, that's all that it make sense to say here. It's beyond the scope of this Gentium documentation to explain all the myriad ways in which TEX-world map files can be installed and used; there are differences between TEX Live and MiKTEX, too.

Instead, we refer you to an explanation of the system-wide installation, with information for both MiKTEX and TEX Live, at https://tug.org/fonts/fontinstall.html. A corresponding explanation for personal installation is at https://tug.org/fonts/fontinstall-personal.html.

Those pages describe using `testfont.tex` for a basic test of the font; a tfm file name to use with that is `ec-gentiumplus-regular`.

To further test your installation and that the package works on your system, run LaTeX on this `gentium.tex` source file. (You'll need some commonly-available LaTeX packages too, or comment them at.) The console output and/or log should tell you whether any fonts were not found. You can also compare your output with the original `gentium.pdf`.

4 Gentium TeX support packages

In short, for LaTeX it suffices to include `\usepackage{gentium}` in your document preamble, and for ConTeXt MkIV, `\setupbodyfont[gentium]`. Details follow.

The only prerequisite is that the LaTeX package (`gentium.sty`) requires xkeyval, which you almost certainly already have.

4.1 Encodings

The package supports not only the most common Latin encodings such as OT1, TeXnANSI/LY1, Cork/EC/T1 and Text Companion/TS1 encodings, but also (in regular and italic) other Latin, Greek and Cyrillic encodings. Most characters in the text encodings and some of those in the Text Companion encoding are available, including the €. You can see the available encodings in table 1. The Greek encoding LGR is supported only in LaTeX, and AGR only in ConTeXt.

script	available encodings	styles
Latin	OT1, T1, LY1, L7x, QX, T5, TS1	regular, italic, bold, bold italic
Cyrillic	T2A, T2B, T2C, X2	regular, italic
Greek	LGR (LaTeX), AGR (ConTeXt)	regular, italic

Table 1: Available encodings in gentium-tug.

The regular and italic styles support all these Latin, Greek and Cyrillic encodings. They support also small caps for the Latin and Cyrillic encodings, but there are no small caps for Greek.

The bold and bold italic styles support only the Latin encodings and they have no small caps.

Cork/T1 encoding lacks visible space, cwm (compound work mark), SS and the character for composing permille sign.

Missing characters in bold styles for Latin encodings:

T1: Aogonek / aogonek, Eogonek / eogonek, Lcaron / lcaron, Scedilla / scedilla, uni021A (Tcommaaccent) / uni021B (tcommaaccent), dcaron, tcaron

L7x: Rcommaaccent, Gcommaaccent, Kcommaaccent, Lcommaaccent, Ncommaaccent, Aogonek, Eogonek, Iogonek, Uogonek

QX: Aogonek, Eogonek, Iogonek, uni021A (Tcommaaccent)

4.2 LaTeX

To use Gentium fonts in a LaTeX document, add `\usepackage{gentium}` to your document preamble. This will set the default serif/roman family to gentium.

If you want to use Gentium together with another font (sans or typewriter) with a different x-height, you should consider using the option `scaled`. This scales Gentium font and if you choose the right scaling factor, you will get the same x-height of both fonts. Here is an example of this option:

```
\usepackage[scaled=0.9]{gentium}
```

4.3 ConTeXt

In ConTeXt MkIV, to switch to the Gentium typeface you only need:

```
\setupbodyfont[gentium]
```

In ConTeXt MkII, before doing that you need either (for pdfTeX):

```
\usetypescriptfile[type-gentium]
\usetypescript[gentium][ec] % or whatever encoding
```

or (for XeTeX):

```
\usetypescriptfile[type-gentium]
\usetypescript[gentium]
```

4.4 Changes in the Type 1 fonts vs. the TrueType originals

The shapes of all characters in the Type 1 fonts are the same as in the original TrueType fonts, except for the unavoidable changes are induced by the format conversion (that is, the spline representations are necessarily different).

However, a few small changes—hopefully improvements—were made to the metrics of the GentiumPlus family (that is, regular and italic; bold and bold italic are untouched). The Type 1 fonts are used to generate the TeX font metric files (tfm), so these changes propagate to the 8-bit engines like pdfTeX.

The first change concerns Greek. 8-bit Greek encodings (LGR and AGR) do not use precomposed accented capital letters. These letters are composed as a sequence of two glyphs: accent + capital letter. The problem is that this sequence does not look like the precomposed letter—there is often big space between the accent and the letter. Therefore, there are some extra kerning pairs between accents and capital Greek letters. These kerning pairs are created automatically (the script is included in the sources) and the goal is to have the same relative position between the accent and the letter as in the precomposed letter. Thanks to these extra kerning pairs you should get better results for 8-bit engines. These changes are irrelevant for Unicode engines—they use the precomposed letters.

Another change concerning Greek was made in July 2019 (version 1.1.1): for the LGR encoding only (files `lgr-gentiumplus-regular.tfm` and `lgr-gentiumplus-regular.tfm`), ligatures were added such that a sigma at the end of a word (i.e., the compound-word-mark as a boundary character) or followed by punctuation is automatically changed to a final sigma, as is usual for that encoding. Thanks to Ralf Stubner for suggesting and then implementing this.

The second general change is in the letters dcaron (ď) and lcaron (ľ) that are used in the Czech and Slovak languages. (There was no need to change tcaron (ť) and Lcaron (Ľ) with the same accent.) There is no change of their shapes, and their advance widths are also untouched—the change is to add several kerning pairs with quite big negative values. Without these changes there was often a large space between dcaron or lcaron and the following letter, so the changes make the words containing these letters much more compact. You get these changes automatically if you use 8-bit engines. If you use Unicode engines with the original TrueType fonts, you get the original metrics. However, you can tell the Unicode engines to use the Type 1 fonts (which append PS to the family name) like this:

```
\usepackage{fontspec}
\setmainfont{GentiumPlusPS}
```

Then you get the additional kern pairs for dcaron and lcaron. The unfortunately disadvantage is that you cannot use small caps.

The last (similar) change is that additional kerning pairs were added to the Type 1 fonts for accented Latin letters and small caps. The original TrueType fonts have no such kerning pairs. As with the Czech/Slovak changes, you get these changes automatically if you use 8-bit engines. If you use Unicode engines with the original TrueType fonts, you get the original metrics, but you can override as above (but since you cannot use small caps with that method, the kerning pairs for small caps become irrelevant).

5 Known bugs

There are problems in older versions of pdfTEX with small caps when using TrueType fonts. In particular, the Latin encoding T5 and all Cyrillic encodings are unusable. You can use the Type 1 version of the fonts or at least pdfTEX version 1.40.13 to avoid these problems.

The Gentium fonts are a work in progress and as such they still miss some features like kerning pairs for some letters. Currently, there are no kerning pairs in the GentiumBasic family at all and the GentiumPlus family has kerning pairs just for Latin letters without accents and for Greek letters; there are no kerning pairs for small caps, accented Latin letters or Cyrillic letters. The Type 1 fonts in this package have some additional kerning pairs for accented Latin letters and for small caps. Kerning pairs for Cyrillic are under consideration.

6 License

The fonts in this page, both the SIL originals and the derived Type 1 versions, are released under OFL. The TEX support files are licensed under the Expat License. Here are the full license texts.

6.1 SIL Open Font License

Copyright (c) 2003-2011 SIL International (https://www.sil.org/), with Reserved Font Names “Gentium” and “SIL”.

This Font Software is licensed under the SIL Open Font License, Version 1.1. This license is copied below, and is also available with a FAQ at: http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 — 26 February 2007

PREAMBLE

The goals of the Open Font License (OFL) are to stimulate worldwide development of collaborative font projects, to support the font creation efforts of academic and linguistic communities, and to provide a free and open framework in which fonts may be shared and improved in partnership with others.

The OFL allows the licensed fonts to be used, studied, modified and redistributed freely as long as they are not sold by themselves. The fonts, including any derivative works, can be bundled, embedded, redistributed and/or sold with any software provided that any reserved names are not used by derivative works. The fonts and derivatives, however, cannot be released under any other type of license. The requirement for fonts to remain under this license does not apply to any document created using the fonts or their derivatives.

DEFINITIONS

"Font Software" refers to the set of files released by the Copyright Holder(s) under this license and clearly marked as such. This may include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the copyright statement(s).

"Original Version" refers to the collection of Font Software components as distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting, or substituting—in part or in whole—any of the components of the Original Version, by changing formats or by porting the Font Software to a new environment.

"Author" refers to any designer, engineer, programmer, technical writer or other person who contributed to the Font Software.

PERMISSION & CONDITIONS

Permission is hereby granted, free of charge, to any person obtaining a copy of the Font Software, to use, study, copy, merge, embed, modify, redistribute, and sell modified and unmodified copies of the Font Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components, in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled, redistributed and/or sold with any software, provided that each copy contains the above copyright notice and this license. These can be included either as stand-alone text files, human-readable headers or in the appropriate machine-readable metadata fields within text or binary files as long as those fields can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font Name(s) unless explicit written permission is granted by the corresponding Copyright Holder. This restriction only applies to the primary font name as presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font Software shall not be used to promote, endorse or advertise any Modified Version, except to acknowledge the contribution(s) of the Copyright Holder(s) and the Author(s) or with their explicit written permission.

5) The Font Software, modified or unmodified, in part or in whole, must be distributed entirely under this license, and must not be distributed under any other license. The requirement for fonts to remain under this license does not apply to any document created using the Font Software.

TERMINATION

This license becomes null and void if any of the above conditions are not met.

DISCLAIMER

THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND

NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL THE COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

6.2 Expat License

Copyright (c) 2008-2019 TeX Users Group

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.