LuaTEX for the \LaTeX{} user: An introduction

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Abstract

LuaTEX, the \TeX{} extension that incorporates the Lua scripting language and \Omega{} extensions, has been available for three years already and was added to \TeX{} Live in 2008. Yet, the \LaTeX{} packages that have been developed for it are rather little known and, because the main developers of LuaTEX are deeply involved in Con\TeXt{}, there seems to be a gap between LuaTEX and \LaTeX{} users. This note is a beginning at overcoming this difference.

1 Introduction

LuaTEX is the extension of \TeX{} that incorporates Lua, as well as the capabilities of \Omega{}. It has also been programmed with hooks to interact with the internals of \TeX{}'s algorithms (callbacks in Lua parlance), that can now be rewritten using Lua code. However, most of the power of LuaTEX resides at a very low level and is available to the user only with the help of macros, that have been written for Con\TeXt{} over the past several years, and only recently begun for \LaTeX{}. I will give a brief descriptions of some of these \LaTeX{} packages.

All the packages mentioned here are available in \TeX{} Live 2009.

2 Ifluatex

The package ifluatex provides the conditional command \texttt{\ifluatex} to test whether we’re running LuaTEX or some other \TeX{} engine.

3 Input encodings

LuaTEX reads source files in Unicode UTF-8 encoding, and it is highly recommended to use that encoding in order to take full advantage of the capabilities of LuaTEX. However, for people who want or need to use 8-bit encodings like Latin 1 or KOI-8, the luainputenc package emulates the behaviour of the standard inputenc in LuaTEX. It recognizes all the encodings that the latter package knows about and can therefore be used for legacy documents, with some limitations.

4 Fonts

One of the most elaborate packages for use with LuaTEX is luatexload.

In this section, I will use the free Linux Libertine fonts (\url{http://linuxlibertine.sourceforge.net/}) as an example; these fonts have many features that demonstrate OpenType capabilities. I will assume that the font files are available to \TeX{} and that the four faces (roman, italic, bold and bold italic) are respectively called LinLib-Re.otf, LinLib-It.otf, LinLib-Bd.otf, and LinLib-BI.otf.

luatexload implements a \TeX{}-like syntax for \texttt{\font}, hence a commands such as

\texttt{\font\librm="LinLib-Re"
"=LinLib-Re:script=latn:+liga"}

will load the same font while activating the liga feature of the Latin script.

Other useful OpenType feature names include

• \texttt{smcp}, for small capitals;
• \texttt{onum}, for old-style numerals;
• \texttt{subs}, for subscript;
• \texttt{sup}, for superscript.

Here is a complete NFSS declaration of the Linux Libertine family for \LaTeX{}:

\begin{verbatim}
\DeclareFontFamily{T1}{libertine}{}
\DeclareFontShape{T1}{libertine}{m}{n}{<-> "LinLib-Re:+liga"}{}
\DeclareFontShape{T1}{libertine}{m}{sc}{<-> "LinLib-Re:+liga:+smcp"}{}
\DeclareFontShape{T1}{libertine}{m}{it}{<-> "LinLib-It:+liga"}{}
\DeclareFontShape{T1}{libertine}{bx}{n}{<-> "LinLib-Bd:+liga"}{}
\DeclareFontShape{T1}{libertine}{bx}{it}{<-> "LinLib-BI:+liga"}{}
\end{verbatim}

Then, after defining \texttt{\libertine} as follows:

\begin{verbatim}
\newcommand{\libertine}{\fontfamily{libertine}\selectfont}
\end{verbatim}

we can use \texttt{\libertine} to switch to the Libertine family.

More examples of using \LaTeX{} with LuaTEX are gathered on \url{http://code.google.com/p/mingyue}.

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