LuaTeX and XeTeX

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1 History

TEX was written long before the invention of Unicode, and introduced outline fonts before the invention of Type I fonts by Adobe and the adoption of Type I, Truetype and OpenType fonts by the computing industry. Because it was written too early, ordinary TEX cannot use the standard system fonts available on your computer.

Over the last several years, several research programs in the TEX world have been devoted to modifying TEX so it could accept Unicode input and use your system fonts directly. These developments are particularly important for users writing in non Western scripts like Arabic, Chinese, and others, because the fonts for these scripts are already available on most platforms. Unicode makes it possible to type non Western symbols directly into the editor, including typing from right to left when the language requires it. System fonts then provide the correct Unicode glyphs in the typeset output.

The first of these research projects to mature was XeTEX, written by Jonathan Kew. Many users have switched to it for commercial use. Ordinary TEX documents typeset as usual in XeTEX, but additional commands are available to switch fonts.

The other significant project is LuaTEX, by Hans Hagen, Hartmut Henkel, and Taco Hoekwater. It is just now reaching the point where it can be used for serious work.

LATEX is an extensive set of macros living on top of TEX and pdfTEX. Will Robertson wrote an important package, *fontspec*, which makes the XeTEX font changes extremely easy to use in LATEX; the emergence of this package marked the beginning of acceptance of XeLaTEX in the larger TEX world. Will Robertson, Khaled Hosny, and Elie Roux have recently

extended the *fontspec* package to LuaTEX, making it easy for LATEX users to experiment with LuaTEX.

This folder contains brief documents explaining how to get started with XeLaTEX and with LuaLaTEX.

Before running LuaTEXthe first time, open Terminal and type the following command. Then push RETURN. The command will take a few minutes to run. It initializes the font cache in LuaTEX and must be run only once. Notice that "luaotfload-tool" is all one word.

```
luaotfload-tool  -u
```

2 ConTeXt

Another quite different package is ConTeXt by Hans Hagen, which also works on top of all these engines. The authors of LuaTEX come from the ConTeXt community.

TeXShop contains engine files to run ConTeXt. These engines are named "ConTeXt (LuaTeX)", "ConTeXt (XeTeX)", and "ConTeXt (pdfTeX)", and typeset ConTeXt on the indicated base. New users should run on top of LuaTEX. TeXShop users may need to activate these engines by moving them from ∼/Library/TeXShop/Engines/Inactive to ∼/Library/TeXShop/Engines before using them. In TeXShop, the engine files may have the older names indicated below. Change to the new names when activating the engines:

- ConTeXt-MKIV → ConTeXt (LuaTeX)
- ConTeXt-xetex → ConTeXt (XeTeX)
- ConTeXt → ConTeXt (pdfTeX)

We recommend that ConTeXt source files begin with the magic lines:

```
% !TEX encoding = UTF-8 Unicode
% !TEX TS-program = ConTeXt (LuaTeX)
```

These lines tell the editor to save the source with unicode encoding, and to use the ConTeXt (LuaTeX) engine to typeset.

This folder contains a brief ConTeXt document which typesets in LuaTEX.

If you later add new system fonts which you want the program to use, open Terminal in /Applications/Utilities and run the command

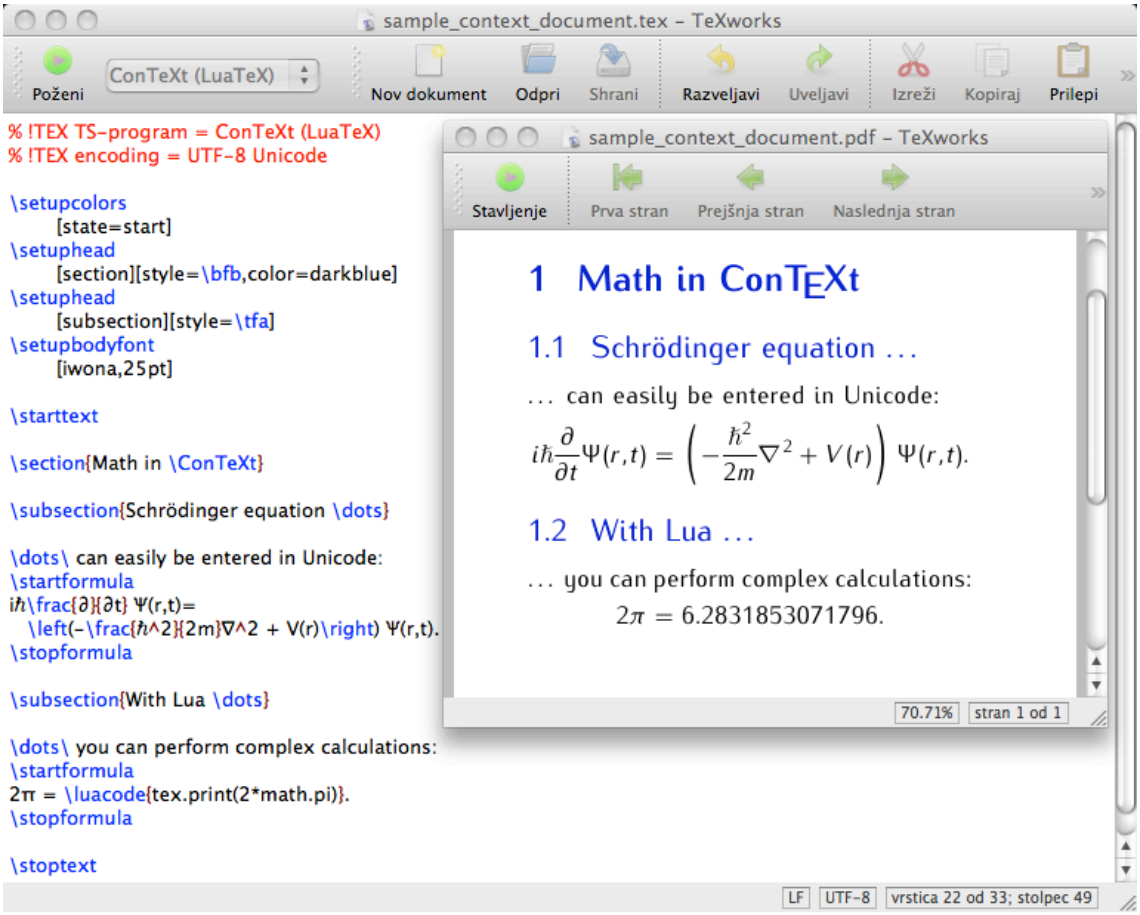

Figure 1: ConTeXt running on TeXworks

```
mtxrun --generate
```

You need only do this once.

Users interested in using ConTeXt with LuaTEX should consult:

http://wiki.contextgarden.net/Main_Page

http://www.pragma-ade.com

http://www.luatex.org