LuaTEX

using plain TEX
TUG 2009

◆ Although we use ConTEXt for testing we also need to check basic behaviour with a minimal macro set and bare definitions.

◆ Most tests with plain TEX are done with no additional code loaded (like running the TEXbook).

◆ It can be handy to check at least basic OpenType font support in plain TEX.

◆ And using mplib in its simple form also makes sense.

Why

◆ We don't touch the plain TₑX format.

◆ Format generation happens via `luatex-plain.tex`.

◆ There some code is hooked into `\everyjob` so that a few extra files are loaded.

◆ Additional font support uses files from the ConTₑXt distribution but fancy features are not available.

◆ Also MetaPost library support is loaded, but again with no fancy extensions.

◆ In order not to get burdened by ConTₑXt beta versions, all font related code can be loaded from a merge file.

Principles

◆ As there is no high level font interface, the input method is similar to X∃TEX but we also support location prefixes (`file:` and `name:`) and have a few more keys.

◆ Fonts can be loaded in base mode in which case TEX's traditional mechanisms for ligature building and kerning are used.

◆ We can also use node mode where we use Lua instead. This is needed when we use more complex OpenType features.

◆ We do support OpenType math fonts but keep in mind that plain has its own font model and math setup as it's not an all-purpose macro package.

Fonts

The extensions are loaded as follows:

```
\input plain

\directlua {tex.enableprimitives('', tex.extraprimitives())}

\pdfoutput=1

\everyjob \expandafter {%
    \the\everyjob
    \input luatex-basics\relax
    \input luatex-fonts\relax
    \input luatex-mplib\relax
}

\edef\fmtversion{\fmtversion+luatex}
```

The basics provide a `\newattribute` **macro. This is needed because we use a reserved range at the Lua end.**

What it does

You need to make a format:

```
luatex --ini luatex-plain.tex
```

The format has to be copied to a known path:

```
copy luatex-plain.fmt <texroot>/texmf-mswin/web2x/luatex/luatex.fmt
```

After that you can process files:

```
luatex yourfile.tex
```

Don't forget:

```
\pdfoutput=1
```

Usage

```
\font\testa=file:lmroman10-regular at 12pt
\font\testb=file:lmroman12-regular:+liga; at 24pt
\font\testc=file:lmroman12-regular:mode=node;+liga; at 24pt
\font\testd=name:lmroman10bold at 12pt

\font\testh=cmr10
\font\testi=ptmr8t

\font\teste=[lmroman12-regular]:+liga at 30pt
\font\testf=[lmroman12-regular] at 40pt

\font\testj=adobesongstd-light % cid font

\font\testk=cambria(math) {\mathtest 123} % beware: plain is set up for cm

\font\testl=file:IranNastaliq.ttf:mode=node;script=arab;language=dflt;\
    +calt;+ccmp;+init;+isol;+medi;+fina;+liga;+rlig;+kern;+mark;+mkmk at 14pt
```

If you want access by name you need to generate a font database, using:

```
mtxrun --script font --names
```

and put the resulting file in a spot where LuaTEX can find it.

Defining fonts

```
\setmplibformat{plain}

\mplibcode
    beginfig(1) ;
        draw fullcircle
            scaled 10cm
            withcolor red
            withpen pencircle xscaled 4mm yscaled 2mm rotated 30 ;
    endfig ;
\endmplibcode
```

Running MetaPost

As a bonus, the ConTeXt distribution ships with a **Font Inspector.**

Font inspector