The luatex85 Package*

LaTeX3 project

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1 Introduction

LuaTeX 0.85 and 0.87 contain many changes from LuaTeX 0.80 as contained in TeXLive 2014. Most notably almost all the pdfTeX extended primitves with names `\pdf...` have been renamed or removed. LuaTeX is aiming for a cleaner separation of the "back end" PDF generation (that corresponds to the work of a dvi driver with classical TeX).

There are many other changes and bug fixes in the LuaTeX sources, however this package is just concerned with compatibility for documents or packages using the pdfTeX primitives.

The changes are of several types:

A few commands have been removed, as the facilities are achievable in Lua (mostly these had already been removed in earlier release).

Some commands have been "adopted" as LuaTeX primitives and so lose their `\pdf` prefix (and in some cases are renamed) so `\pdfsavepos` becomes `\savepos`, but `\pdfoutput` becomes `\outputmode`.

The majority of the "back end" commands have been removed and replaced by calls to one of three new primitives, `\pdffeedback`, `\pdfextension` and `\pdfvariable` These take keywords so for example `\pdfliteral` becomes `\pdfextension literal`.

The LuaTeX manual lists suitable compatibility definitions that may be made so that documents can continue to use the old names. Mostly this package just consists of those definitions, with minor changes in some cases. (Mostly different choices over the use of `\protected` or `\edef`.)

In general it is recommended that packages are updated to use the new primitive LuaTeX syntax when used with LuaTeX, but until packages are updated authors may find that adding

```
\RequirePackage{luatex85}
```

as the first line of their document helps with the use of older packages with the new LuaTeX.

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As noted above, there are other changes in LuaTeX, notably the removal of the `\verb\write18` syntax for accessing system commands. The LaTeX tools bundle includes the shellesc package which emulates `\write18` as well as providing an alternative `\Shellescape` syntax that may be used with all engines.

Note that if packages are found that require luatex85 you may want to contact the authors asking that the packages be updated to current LuaTeX syntax. The luatex85 package should be seen as a temporary aid to improve compatibility during the transition towards LuaTeX 1.0 it is not intended that future documents should always have to load this compatibility emulation.

The package is designed to also be usable with plain LuaTeX.

2 Implementation

1 ⟨*package⟩

2.1 Checking the engine

```
2 \ifx\pdfvariable\undefined
3   \expandafter\endinput
4 \fi
```

2.2 Commands promoted to LuaTeX primitives.

```
5 \let\pdfpagewidth         \pagewidth
6 \let\pdfpageheight        \pageheight
7 \let\pdfadjustspacing     \adjustspacing
8 \let\pdfprotrudechars     \protrudechars
9 \let\pdfnoligatures       \ignoreligaturesinfont
10 \let\pdffontexpand       \expandglyphsinfont
11 \let\pdfcopyfont         \copyfont
12 \let\pdfxform            \saveboxresource
13 \let\pdflastxform        \lastsavedboxresourceindex
14 \let\pdfrefxform         \useboxresource
15 \let\pdfximage           \saveimageresource
16 \let\pdflastximage       \lastsavedimageresourceindex
17 \let\pdflastximagepages  \lastsavedimageresourcepages
18 \let\pdfrefximage        \useimageresource
19 \let\pdfsavepos          \savepos
20 \let\pdflastxpos         \lastxpos
21 \let\pdflastypos         \lastypos
22 \let\pdfoutput           \outputmode
23 \let\pdfdraftmode        \draftmode
24 \let\pdfpxdimen          \pxdimen
25 \let\pdfinsertht         \insertht
26 \let\pdfnormaldeviate    \normaldeviate
27 \let\pdfuniformdeviate   \uniformdeviate
28 \let\pdfsetrandomseed    \setrandomseed
29 \let\pdfrandomseed       \randomseed
30 \let\pdfprimitive        \primitive
```

```
\let\ifpdfprimitive      \ifprimitive
\let\ifpdfabsnum         \ifabsnum
\let\ifpdfabsdim         \ifabsdim
```

Use `\enableprimitives` here in case of conflict with tracefnt.

```
\directlua{tex.enableprimitives('pdf',{'tracingfonts'})}
```

2.3 Commands converted to constants

The `\pdffeedback` version is not defined in dvi mode and (currently) is curiously defined to be 40 in pdf mode, so define these as constant values.

```
\protected\def\pdftexversion     {\numexpr 140\relax}
          \def\pdftexrevision    {7}
%\protected\def\pdftexversion     {\numexpr\pdffeedback version\relax}
%          \def\pdftexrevision    {\pdffeedback revision}
```

2.4 Commands converted to `\pdffeedback`

Expandable commands use a simple `\def`. Internal registers that were accessed via `\the` in PDFTEX use a `\protected` definition using `\numexpr` terminated by an explicit `\relax`.

```
\protected\def\pdflastlink       {\numexpr\pdffeedback lastlink\relax}
\protected\def\pdfretval         {\numexpr\pdffeedback retval\relax}
\protected\def\pdflastobj        {\numexpr\pdffeedback lastobj\relax}
\protected\def\pdflastannot      {\numexpr\pdffeedback lastannot\relax}
          \def\pdfxformname      {\pdffeedback xformname}
{\outputmode=1
         \xdef\pdfcreationdate   {\pdffeedback creationdate}
}
          \def\pdffontname       {\pdffeedback fontname}
          \def\pdffontobjnum     {\pdffeedback fontobjnum}
          \def\pdffontsize       {\pdffeedback fontsize}
          \def\pdfpageref        {\pdffeedback pageref}
          \def\pdfcolorstackinit {\pdffeedback colorstackinit}
```

2.5 Commands converted to calls to `\pdfextension`

These use a `\protected` definition. Commands that take no following argument are currently terminated by `\relax` as suggested in the LuaTEX manual, although it would be appear to be sufficient to consistently terminate these commands with a space.

```
\protected\def\pdfliteral        {\pdfextension literal}
\protected\def\pdfcolorstack     {\pdfextension colorstack}
\protected\def\pdfsetmatrix      {\pdfextension setmatrix}
\protected\def\pdfsave           {\pdfextension save\relax}
\protected\def\pdfrestore        {\pdfextension restore\relax}
\protected\def\pdfobj            {\pdfextension obj }
\protected\def\pdfrefobj         {\pdfextension refobj }
\protected\def\pdfannot          {\pdfextension annot }
```

```
\protected\def\pdfstartlink      {\pdfextension startlink }
\protected\def\pdfendlink        {\pdfextension endlink\relax}
\protected\def\pdfoutline        {\pdfextension outline }
\protected\def\pdfdest           {\pdfextension dest }
\protected\def\pdfthread         {\pdfextension thread }
\protected\def\pdfstartthread    {\pdfextension startthread }
\protected\def\pdfendthread      {\pdfextension endthread\relax}
\protected\def\pdfinfo           {\pdfextension info }
\protected\def\pdfcatalog        {\pdfextension catalog }
\protected\def\pdfnames          {\pdfextension names }
\protected\def\pdfincludechars   {\pdfextension includechars }
\protected\def\pdffontattr       {\pdfextension fontattr }
\protected\def\pdfmapfile        {\pdfextension mapfile }
\protected\def\pdfmapline        {\pdfextension mapline }
\protected\def\pdftrailer        {\pdfextension trailer }
\protected\def\pdfglyphtounicode {\pdfextension glyphtounicode }
```

2.6 Commands converted to calls to \pdfvariable

Currently as suggested in the manual the call to \pdfvariable has no explict termination, and relies on the fact that no variable name is a prefix of another. \edef is used to save one expansion step when these comands are used the definition directly access the internal command token.

```
\protected\edef\pdfcompresslevel       {\pdfvariable compresslevel}
\protected\edef\pdfobjcompresslevel    {\pdfvariable objcompresslevel}
\protected\edef\pdfdecimaldigits       {\pdfvariable decimaldigits}
\protected\edef\pdfgamma               {\pdfvariable gamma}
\protected\edef\pdfimageresolution     {\pdfvariable imageresolution}
\protected\edef\pdfimageapplygamma     {\pdfvariable imageapplygamma}
\protected\edef\pdfimagegamma          {\pdfvariable imagegamma}
\protected\edef\pdfimagehicolor        {\pdfvariable imagehicolor}
```

Note that \pdfimageaddfilename was never actually in PDFTEX, But is included here so that all the \pdfvariable cases are covered.

```
\protected\edef\pdfimageaddfilename    {\pdfvariable imageaddfilename}
```

```
\protected\edef\pdfpkresolution        {\pdfvariable pkresolution}
\protected\edef\pdfinclusioncopyfonts  {\pdfvariable inclusioncopyfonts}
\protected\edef\pdfinclusionerrorlevel {\pdfvariable inclusionerrorlevel}
```

Note that \pdfreplacefont was never in public releases of PDFTEX, It was in LuaTEX0.85, but discussion on luatex list lead to it being removed in 0.87

```
%\protected\edef\pdfreplacefont         {\pdfvariable replacefont}
```

```
\protected\edef\pdfgentounicode        {\pdfvariable gentounicode}
\protected\edef\pdfpagebox             {\pdfvariable pagebox}
\protected\edef\pdfminorversion        {\pdfvariable minorversion}
\protected\edef\pdfuniqueresname       {\pdfvariable uniqueresname}
\protected\edef\pdfhorigin             {\pdfvariable horigin}
\protected\edef\pdfvorigin             {\pdfvariable vorigin}
\protected\edef\pdflinkmargin          {\pdfvariable linkmargin}
```

```
\protected\edef\pdfdestmargin          {\pdfvariable destmargin}
\protected\edef\pdfthreadmargin        {\pdfvariable threadmargin}
\protected\edef\pdfpagesattr           {\pdfvariable pagesattr}
\protected\edef\pdfpageattr            {\pdfvariable pageattr}
\protected\edef\pdfpageresources       {\pdfvariable pageresources}
```

Note that `\pdfxformattr` and `\pdfxformresources` were never in PDFTEX, But are included here so that all the `\pdfvariable` cases are covered.

```
\protected\edef\pdfxformattr           {\pdfvariable xformattr}
\protected\edef\pdfxformresources      {\pdfvariable xformresources}

\protected\edef\pdfpkmode              {\pdfvariable pkmode}
```

⟨/package⟩