About upL\TeX\2ε

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This document provides a brief description of upL\TeX\2ε, the Unicode version of Japanese p\LaTeX\2ε. This version is based on 'p\LaTeX\2ε Community Edition.'

ASCII p\LaTeX\ is the most popular \LaTeX\ engine in Japan and is widely used for a high-quality typesetting, even for commercial printing. However, p\LaTeX\ has some limitations:

- The Character set available is limited to JIS X 0208, namely JIS level-1 and level-2
- Difficulty in handling 8-bit Latin, due to legacy double byte Japanese encodings
- Difficulty in typesetting CJK (Chinese, Japanese and Korean) multilingual documents

To overcome these weak points, a Unicode extension of p\LaTeX\, up\LaTeX, has been developed.\(^1\) The Unicode p\LaTeX\ format run on up\LaTeX\ is called upL\LaTeX. Current upL\LaTeX is maintained by Japanese \TeX\ Development Community,\(^2\) in sync with p\LaTeX community edition.\(^3\) The development version is available from GitHub repository\(^4\). Any bug reports and requests should be sent to Japanese \TeX\ Development Community, using GitHub Issue system.

\(^1\)http://www.t-lab.opal.ne.jp/tex/uptex.html
\(^2\)https://texjp.org
\(^3\)https://github.com/texjporg/platex
\(^4\)https://github.com/texjporg/uplatex
1 Introduction to this document

This document briefly describes upLATEX2ε, but is not a manual of upLATEX2ε. The basic functions of upLATEX2ε are almost the same with those of pLATEX2ε and LATEX2ε, so please refer to the documentation of those formats.

For upTEX, please refer to the official website or [1] (in English).

This document consists of following parts:

Section 1 This section; describes this document itself.

Section 2 Brief explanation of extensions in upLATEX2ε. Also describes the standard classes and packages.

Section 3 The compatibility note for users of the old version of upLATEX2ε or those of the original pLATEX2ε/LATEX2ε.

Appendix A Describes docstrip Options for this document.

Appendix B Description of ‘upldoc.tex’ (counterpart for ‘source2e.tex’ in LATEX2ε).

Appendix C Description of a shell script to process ‘upldoc.tex’, etc.

2 About Functions of pLATEX2ε

The structure of upLATEX2ε is similar to that of pLATEX2ε: it consists of 3 types of files: a format (uplatex.ltx), classes and packages.

2.1 About the Format

To make a format for upLATEX, process “uplatex.ltx” with INI mode of ε-TEX.5 A handy command ‘fmtutil-sys’ (or ‘fmtutil’) for this purpose is available in TEx Live. The following command generates uplatex.fmt.

fmtutil-sys --byfmt uplatex

The content of uplatex.ltx is shown below. In the current version of upLATEX, first we simply load latex.ltx and modify/extend some definitions by loading plcore.ltx (available from pLATEX) and uplcore.ltx.

1 (+plcore)

5 Formerly both upTEX and ε-upTEX can make the format file for upLATEX, however, it’s not true anymore because LATEX requires ε-TEX since 2017.
Temporarily disable `\dump` at the end of `latex.ltx`.

2 `\let\orgdump\dump`
3 `\let\dump\relax`

Load `latex.ltx` here. Within the standard installation of `\TeX` Live, `hyphen.cfg` provided by “Babel” package will be used.

4 `\input latex.ltx`

Load `plcore.ltx` and `uplcore.ltx`.

5 `\typeout{**************************************************^^J%
6    *^^J%
7    * making upLaTeX format^^J%
8    *^^J%
9    **************************************************}
10 `\makeatletter`
11 `\input plcore.ltx`
12 `\input uplcore.ltx`

Load font-related default settings, `upldefs.ltx`. If a file `upldefs.cfg` is found, then that file will be used instead.

13 `\InputIfFileExists{upldefs.cfg}{%
14     \typeout{**************************************************^^J%
15     * Local config file upldefs.cfg used^^J%
16     **************************************************})%
17     {\input{upldefs.ltx}}%
18 %\the\everyjob

Load `uplatex.cfg` if it exists at runtime of upLaTeX 2ε. (Counterpart of `platex.cfg` in pLaTeX 2ε.)

19 `\everyjob\expandafter{%`
20 `\the\everyjob`
21 `\IfFileExists{uplatex.cfg}{%`
22     \typeout{**************************************************^^J%
23     * Loading uplatex.cfg.^^J%
24     **************************************************})%`
25     {\input{uplatex.cfg}}%
26 }

Dump to the format file.

27 `\let\dump\orgdump`
28 `\let\orgdump@undefined`
29 `\makeatother`
30 `\dump`
31 `%\endinput`
The file `uplcore.ltx`, which provides modifications/extensions to make upL\(\LaTeX\) 2\(\varepsilon\), is a concatenation of stripped files below using DOCSTRIP program.

- `uplvers.dtx` defines the format version of upL\(\LaTeX\) 2\(\varepsilon\).
- `uplfosts.dtx` extends NFSS2 for Japanese font selection.
- `plcore.dtx` (the same content as pl\(\LaTeX\) 2\(\varepsilon\)); defines other modifications to L\(\LaTeX\) 2\(\varepsilon\).

Moreover, default settings of pre-loaded fonts and typesetting parameters are done by loading `upldefs.ltx` inside `uplatex.ltx`.\(^6\) This file `upldefs.ltx` is also stripped from `uplfosts.dtx`.

**Attention:**
You can customize upL\(\LaTeX\) 2\(\varepsilon\) by tuning these settings. If you need to do that, copy/rename it as `upldefs.cfg` and edit it, instead of overwriting `upldefs.ltx` itself. If a file named `upldefs.cfg` is found at a format creation time, it will be read as a substitute of `upldefs.ltx`.

As shown above, the files in upL\(\LaTeX\) is named after pl\(\LaTeX\) ones, prefixed with “u.”

**2.1.1 Version**

The version (like “2018-12-01u02”) and the format name (“pLa\TeX\) 2\(\varepsilon\)” ) of upL\(\LaTeX\) 2\(\varepsilon\) are defined in `uplvers.dtx`. This is similar to pl\(\LaTeX\) 2\(\varepsilon\), which defines those in `plvers.dtx`.

**2.1.2 NFSS2 Commands**

upL\(\LaTeX\) 2\(\varepsilon\) shares `plcore.dtx` with pl\(\LaTeX\) 2\(\varepsilon\), so the extensions of NFSS2 for selecting Japanese fonts are available.

**2.1.3 Output Routine and Floats**

upL\(\LaTeX\) 2\(\varepsilon\) shares `plcore.dtx` with pl\(\LaTeX\) 2\(\varepsilon\), so the output routine and footnote macros will behave similar to pl\(\LaTeX\) 2\(\varepsilon\).

\(^6\)Older upL\(\LaTeX\) loaded `upldefs.ltx` inside `uplcore.ltx`; however, upL\(\LaTeX\) community edition newer than 2018 loads `upldefs.ltx` inside `uplatex.ltx`. 
2.2 Classes and Packages

Classes and packages bundled with upL\hbox{\TeX}\坛 are based on those in original pL\hbox{\TeX}\坛, and modified some parameters.

- upL\hbox{\TeX}\坛 classes:
  - ujarticle.cls, ujbook.cls, ujreport.cls
    Standard \textit{yoko-kumi} (horizontal writing) classes; stripped from ujclasses.dtx.
    upL\hbox{\TeX}\坛 edition of \texttt{article.cls}, \texttt{book.cls} and \texttt{report.cls}.
  - utarticle.cls, utbook.cls, utreport.cls
    Standard \textit{tate-kumi} (vertical writing) classes; stripped from ujclasses.dtx.
    upL\hbox{\TeX}\坛 edition of \texttt{article.cls}, \texttt{book.cls} and \texttt{report.cls}.

We don't provide upL\hbox{\TeX}\坛 edition of jltxdoc.cls, but the one from pL\hbox{\TeX} can be used also on upL\hbox{\TeX} without problem.

- upL\hbox{\TeX}\坛 packages:
  - uptrace.sty
    upL\hbox{\TeX}\坛 version of tracefnt.sty; the package tracefnt.sty overwrites upL\hbox{\TeX}\坛-style NFSS2 commands, so uptrace.sty provides redefinitions to recover upL\hbox{\TeX}\坛 extensions. Stripped from uplfonts.dtx.

Other pL\hbox{\TeX} packages work also on upL\hbox{\TeX}.

3 Compatibility with Other Formats and Older Versions

Here we provide some information about the compatibility between current upL\hbox{\TeX}\坛 and older versions or original pL\hbox{\TeX}\坛/\hbox{\LaTeX}\坛.

3.1 Compatibility with pL\hbox{\TeX}\坛/\hbox{\LaTeX}\坛

upL\hbox{\TeX}\坛 is in most part upper compatible with pL\hbox{\TeX}\坛, so you can move from pL\hbox{\TeX}\坛 to upL\hbox{\TeX}\坛 by simply replacing the document class and some macros. However, the default Japanese font metrics in upL\hbox{\TeX}\坛 is different from those in pL\hbox{\TeX}\坛; therefore, you should not expect identical output from both pL\hbox{\TeX}\坛 and upL\hbox{\TeX}\坛.
Note that upL\TeX{} is a new format, so we do not provide support for 2.09 compatibility mode. Follow the standard L\TeX{} 2\epsilon convention!

We hope that most classes and packages meant for L\TeX{} 2\epsilon works also for upL\TeX{} 2\epsilon without any modification. However for example, if a class or a package uses Kanji encoding ‘JY1’ or ‘JT1’ (default on pL\TeX{} 2\epsilon), an error complaining the mismatch of Kanji encoding might happen on upL\TeX{}, in which the default is ‘JY2’ and ‘JT2.’ In this case, we have to say that the class or package does not support upL\TeX{} 2\epsilon; you should use pL\TeX{}, or report to the author of the package or class.

3.2 Support for Package ‘latexrelease’

pL\TeX{} provides ‘platexrelease’ package, which is based on ‘latexrelease’ package (introduced in L\TeX{} <2015/01/01>). It could be better if we also provide a similar package on upL\TeX{}, but currently we don’t need it; upL\TeX{} does not have any recent upL\TeX{}-specific changes. So, you can safely use ‘platexrelease’ package for emulating the specified format date.

A DOCSTRIP Options

By processing uplatex.dtx with DOCSTRIP program, different files can be generated. Here are the DOCSTRIP options for this document:

<table>
<thead>
<tr>
<th>Option</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>plcore</td>
<td>Generates a fragment of format sources</td>
</tr>
<tr>
<td>pldoc</td>
<td>Generates ‘upldoc.tex’ for typesetting upL\TeX{} 2\epsilon sources</td>
</tr>
<tr>
<td>shprog</td>
<td>Generates a shell script to process ‘upldoc.tex’</td>
</tr>
<tr>
<td>Xins</td>
<td>Generates a DOCSTRIP batch file ‘Xins.ins’ for generating the above shell/perl scripts</td>
</tr>
</tbody>
</table>

B Documentation of upL\TeX{} 2\epsilon sources

The contents of ‘upldoc.tex’ for typesetting upL\TeX{} 2\epsilon sources is described here. Compared to individual processings, batch processing using ‘upldoc.tex’ prints also changes and an index.

By default, the description of upL\TeX{} 2\epsilon sources is written in Japanese. If you need English version, first save

\newif\ifJAPANESE
as uplatex.cfg, and process upldoc.tex (upLaTeX 2ε newer than July 2016 is required).

Here we explain only difference between pldoc.tex (pLaTeX 2ε) and upldoc.tex (upLaTeX 2ε).

33 (*pldoc) 34 \begin{filecontents}{upldoc.dic}
35 ೑க ്Εා
36 ೑க ΘΕා
37 \end{filecontents}

The document of pLaTeX 2ε requires plext package, since plext.dtx contains several examples of partial vertical writing. However, we don’t have such examples in upLaTeX 2ε files, so no need for it.

38 \documentclass{jltxdoc}
39 %\usepackage{plext} % comment out for upLaTeX
40 \listfiles
41
42 \DoNotIndex{\def, \long, \edef, \zdef, \gdef, \let, \global}
43 \DoNotIndex{\if, \ifnum, \ifdim, \ifmmode, \ifvmode, \ifhmode, \iftrue, \iffalse, \ifvoid, \ifeof, \ifcase, \else, \or, \fi}
44 \DoNotIndex{\box, \copy, \setbox, \unvbox, \unhbox, \hbox, \vbox, \vtop, \vcenter}
45 \DoNotIndex{\@empty, \immediate, \write}
46 \DoNotIndex{\group, \bgroup, \expandafter, \begingroup, \endgroup}
47 \DoNotIndex{\divide, \advance, \multiply, \count, \dimen}
48 \DoNotIndex{\relax, \space, \string}
49 \DoNotIndex{\csname, \endcsname, \@spaces, \openin, \openout, \closein, \closeout}
50 \DoNotIndex{\catcode, \endinput}
51 \DoNotIndex{\jobname, \message, \read, \the, \m@ne, \noexpand}
52 \DoNotIndex{\hsize, \vsize, \hskip, \vskip, \kern, \hfil, \vfil, \hss, \vss, \unskip}
53 \DoNotIndex{\m@ne, \z@, \z@skip, \one, \tw@, \p@, \e@, \m@th, \setlength, \addtolength}
54 \DoNotIndex{\newcommand, \renewcommand}
55
56 %ifJAPANESE
57 \IndexPrologue{\part*{索引}}%
58 \markboth{索引}{索引}
59 \addcontentsline{toc}{part}{索引}%
60 イタリック体の数字は、その項目が説明されているページを示しています。61 下線の引かれた数字は、定義されているページを示しています。
62 その他の数字は、その項目が使われているページを示しています。}
63 %else
64 \IndexPrologue{\part*{Index}}%
65 \markboth{Index}{Index}%
66 \addcontentsline{toc}{part}{Index}%
67 The italic numbers denote the pages where the corresponding entry is described, numbers underlined point to the definition,
all others indicate the places where it is used.}\fi
\%\ifJAPANESE
\GlossaryPrologue{\part*{変更履歴}}\fi
\GlossaryPrologue{\part*{Change History}}\%\markboth{変更履歴}{変更履歴}\%\addcontentsline{toc}{part}{変更履歴}\else
\GlossaryPrologue{\part*{Change History}}\%\markboth{Change History}{Change History}\%\addcontentsline{toc}{part}{Change History}\fi
\makeatletter
\def\changes@#1#2#3{
\let\protect\@unexpandable@protect
\edef\@tempa{\noexpand\glossary{#2\space \currentfile\space #1\levelchar\ifx\saved@macroname\@empty\space \actualchar \generalname\else\expandafter\@gobble\saved@macroname \actualchar\string \verb \quotechar*\verbatimchar \verbatimchar\fi :\levelchar #3}}\%\@tempa\endgroup\@esphack
\renewcommand*\MacroFont{\fontencoding{encodingdefault}\fontfamily{ttdefault}\fontseries{mddefault}\fontshape{updefault}\small\hfuzz 6pt\relax}
\renewcommand*\l@subsection{\@dottedtocline{2}{1.5em}{2.8em}}
\renewcommand*\l@subsubsection{\@dottedtocline{3}{3.8em}{3.4em}}
\makeatother
\RecordChanges
\CodelineIndex
\EnableCrossrefs
\setcounter{IndexColumns}{2}
\settowidth{\MacroIndent}{\ttfamily\scriptsize 000}\}

Set the title, authors and the date for this document.
\title{The \LaTeXe\ Sources}
\author{Ken Nakano \& Japanese \TeX\ Development Community \& TTK}
\% Get the (temporary) date and up-patch level from uplvers.dtx
\maketitle
\let\patchdate=\@empty
\begingroup
\def\ProvidesFile#1[#2 #3]{\def\uppatch@level#5{\date{#2}\xdef\patchdate{#5}\endinput}}
\input{uplvers.dtx}
\endgroup

% Add the patch version if available.
\def\Xpatch{}
\ifx\patchdate\Xpatch\else
\edef\@date{\@date\space version \patchdate}
\fi

% Obtain the last update info, as upLaTeX does not change format date
% \@date if successful, reconstruct the date completely
\def\lastupd@te{0000/00/00}
\begingroup
\def\ProvidesFile#1[#2 #3]{\def\@tempd@te{#2}\endinput}
\@ifl@t@r{\@tempd@te}{\lastupd@te}{\global\let\lastupd@te\@tempd@te}\fi
\let\ProvidesClass\ProvidesFile
\let\ProvidesPackage\ProvidesFile
\input{uplvers.dtx}
\input{uplfonts.dtx}
\input{ukinsoku.dtx}
\input{ujclasses.dtx}
\endgroup
\@ifl@t@r{\lastupd@te}{0000/00/00}{\date{Version \patchdate\break (last updated: \lastupd@te)}}
\makeatother

Here starts the document body.
\begin{document}
\pagenumbering{roman}
\maketitle
\renewcommand\maketitle{}
\tableofcontents
\clearpage
\pagenumbering{arabic}
\DocInclude{uplvers} % upLaTeX version
\DocInclude{uplfonts} % NFSS2 commands
\DocInclude{ukinsoku} % kinsoku parameter
\DocInclude{ujclasses} % Standard class
C Additional Utility Programs

C.1 Shell Script mkpldoc.sh

A shell script to process ‘pldoc.tex’ and produce a fully indexed source code description. Run sh mkpldoc.sh to use it.

The script is almost identical to that in pLATEX, so here we describe only the difference.

To make the Change log and Glossary (Change History) for upLATEX using ‘mendex,’ we need to run it in UTF-8 mode. So, option ‘-U’ is important.\footnote{The command ‘uplatex’ should be also in UTF-8 mode, but it defaults to UTF-8 mode; therefore, we don’t need to add ‘-kanji=utf8’ explicitly.}
C.2 Perl Script dstcheck.pl

The one from pL\LaTeX{}\epsilon\, can be use without any change, so omitted here in upL\LaTeX{}\epsilon\,.

C.3 docstrip Batch file

Here we introduce a docstrip batch file ‘Xins.ins,’ which generates the script described in Appendix C.1. The code is almost identical to that in pL\LaTeX{}\epsilon\,.

\begin{verbatim}
\input docstrip
\keepsilent
{\catcode'#=12 \gdef\MetaPrefix{## }}
declarepreamble\thispre
\endpreamble
\usepreamble\thispre
\declarepostamble\thispost
\endpostamble
\usepostamble\thispost
\generate{
  \file{mkpldoc.sh}{\from{uplatex.dtx}{shprog,ja}}
  \file{mkpldoc-en.sh}{\from{uplatex.dtx}{shprog,en}}}
\endbatchfile
\end{verbatim}
References

[1] Takuji Tanaka, UpTeX — Unicode version of \LaTeX\ with CJK extensions
TUGboat issue 34:3, 2013.
## Change History

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011/05/07</td>
<td>v1.0c-u00</td>
<td>Created up\LaTeX version based on pl\LaTeX one (based on platex.dtx 1997/01/29 v1.0c)</td>
</tr>
<tr>
<td>2016/05/08</td>
<td>v1.0h-u00</td>
<td>Exclude uplpatch.ltx from the document (based on platex.dtx 2016/05/08 v1.0h)</td>
</tr>
<tr>
<td>2016/06/06</td>
<td>v1.0k-u01</td>
<td>Update documents for up\LaTeX.</td>
</tr>
<tr>
<td>2016/06/19</td>
<td>v1.0l-u01</td>
<td>Get the patch level from uplvers.dtx (based on platex.dtx 2016/06/19 v1.0l)</td>
</tr>
<tr>
<td>2016/08/26</td>
<td>v1.0m-u01</td>
<td>Moved loading uplatex.cfg from uplcore.ltx to uplatex.ltx (based on platex.dtx 2016/08/26 v1.0m)</td>
</tr>
<tr>
<td>2017/11/29</td>
<td>v1.0q-u01</td>
<td>New English documentation added (based on platex.dtx)</td>
</tr>
<tr>
<td>2017/12/05</td>
<td>v1.0s-u01</td>
<td>Moved loading default settings from uplcore.ltx to uplatex.ltx (based on platex.dtx 2017/12/05 v1.0s)</td>
</tr>
<tr>
<td>2017/12/10</td>
<td>v1.0s-u02</td>
<td>Load plcore.ltx before pl\LaTeX is assumed</td>
</tr>
<tr>
<td>2018/04/08</td>
<td>v1.0w-u02</td>
<td>Stop showing banner during format generation for safety (based on platex.dtx) 2018/04/08 v1.0w</td>
</tr>
<tr>
<td>2018/09/03</td>
<td>v1.0x-u02</td>
<td>Update document. (based on platex.dtx 2018/09/03 v1.0x)</td>
</tr>
<tr>
<td>2018/09/22</td>
<td>v1.0y-u02</td>
<td>Show last update info on upldoc.pdf (based on platex.dtx 2018/09/22 v1.0y)</td>
</tr>
</tbody>
</table>