About upL\TeX\ 2ε

Ken Nakano & Japanese \TeX\ Development Community & TTK

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upL\TeX\ is a Unicode version of Japanese \pL\TeX\ 2ε. This version is based on ‘\pL\TeX\ 2ε Community Edition.’

\pL\TeX\ is the most popular \TeX\ engine in Japan and is widely used for a high-quality typesetting, even for commercial printing. However, \pL\TeX\ 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 conflict with legacy multibyte Japanese encodings

• Difficulty in typesetting CJK (Chinese, Japanese and Korean) multilingual documents

To overcome these weak points, a Unicode extension of \pL\TeX, upL\TeX, has been developed. The Unicode pL\TeX\ format run on upL\TeX\ is called upL\TeX. Current upL\TeX\ is maintained by Japanese \TeX\ Development Community, in sync with pL\TeX\ community edition. It runs on ε-upL\TeX, an engine with both upL\TeX\ and ε-pL\TeX\ features.

The development version is available from GitHub repository. Any bug reports and requests should be sent to Japanese \TeX\ Development Community, using GitHub Issue system.

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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 upLaTeX 2ε, but is not a manual of upLaTeX 2ε. The basic functions of upLaTeX 2ε are almost the same with those of pLaTeX 2ε and LATEX 2ε, 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 upLaTeX 2ε. Also describes the standard classes and packages.

**Section 3** The compatibility note for users of the old version of upLaTeX 2ε or those of the original pLaTeX 2ε/LATEX 2ε.

**Appendix A** Describes docstrip Options for this document.

**Appendix B** Description of ‘upldoc.tex’ (counterpart for ‘source2e.tex’ in LATEX 2ε).

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

2 About Functions of pLaTeX 2ε

The structure of upLaTeX 2ε is similar to that of pLaTeX 2ε; 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-upTeX.\(^5\)

A handy command ‘fmtutil-sys’ (or ‘fmtutil’) for this purpose is available in TeX Live. The following command generates uplatex.fmt.

\begin{verbatim}
fmtutil-sys --byfmt uplatex
\end{verbatim}

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. Some code may be executed after loading.

13 `\InputIfFileExists{upldefs.cfg}`
14 `{\typeout{*************************************^^J%
15 * Local config file upldefs.cfg used^^J%
16 *************************************}}%^J%
17 {\input{upldefs.ltx}}
18 `\ifx\code@after@pldefs\@undefined\else \code@after@pldefs \fi`

In the previous version, we displayed upLaTeX version on the terminal, so that it can be easily recognized during format creation; however `\everyjob` can contain any code other than showing a banner, so now disabled.

19 `%\the\everyjob`

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

20 `\everyjob`\`expandafter`%
21 `\the\everyjob`
22 `\IfFileExists{uplatex.cfg}{% 
23 `\typeout{**************************^^J%
24 * Loading uplatex.cfg.^^J%
25 *************************************}}%^J%
26 `\input{uplatex.cfg}}{% 
27 `}

Dump to the format file.

28 `\let\dump\orgdump`
29 `\let\orgdump\undefined`
30 `\makeatother`
31 `\dump`
32 `%\endinput`
The file `upcore.ltx`, which provides modifications/extensions to make `upLaTeX2ε`, is a concatenation of stripped files below using `docstrip` program.

- `uplvers.dtx` defines the format version of `upLaTeX2ε`.
- `uplfonts.dtx` extends NFSS2 for Japanese font selection.
- `plcore.dtx` (the same content as `pLaTeX2ε`); defines other modifications to `LaTeX2ε`.

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

Attention:
You can customize `upLaTeX2ε` 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 `upLaTeX` is named after `pLaTeX` ones, prefixed with “u.”

2.1.1 Version

The version (like “2020-10-01u03”) and the format name (“pLaTeX2ε”) of `upLaTeX2ε` are defined in `uplvers.dtx`. This is similar to `pLaTeX2ε`, which defines those in `plvers.dtx`.

2.1.2 NFSS2 Commands

`upLaTeX2ε` shares `plcore.dtx` with `pLaTeX2ε`, so the extensions of NFSS2 for selecting Japanese fonts are available.

2.1.3 Output Routine and Floats

`upLaTeX2ε` shares `plcore.dtx` with `pLaTeX2ε`, so the output routine and footnote macros will behave similar to `pLaTeX2ε`.

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6Older `upLaTeX` loaded `upldefs.ltx` inside `upcore.ltx`; however, `upLaTeX` community edition newer than 2018 loads `upldefs.ltx` inside `uplatex.ltx`. 
2.2 Classes and Packages

Classes and packages bundled with upL\LaTeX{}\varepsilon\, are based on those in original \LaTeX{}\varepsilon\, and modified some parameters.

- \texttt{ujarticle.cls}, \texttt{ujbook.cls}, \texttt{ujreport.cls}
  
  Standard \textit{yoko-kumi} (horizontal writing) classes; stripped from \texttt{ujclasses.dtx}.

- \texttt{utarticle.cls}, \texttt{utbook.cls}, \texttt{utreport.cls}

  Standard \textit{tate-kumi} (vertical writing) classes; stripped from \texttt{ujclasses.dtx}.

We don’t provide upL\LaTeX\, edition of \texttt{jltxdoc.cls}, but the one from \LaTeX\ can be used also on upL\LaTeX\ without problem.

- \texttt{uptrace.sty}

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

Other \LaTeX\ packages work also on upL\LaTeX.

3 Compatibility with Other Formats and Older Versions

Here we provide some information about the compatibility between current upL\LaTeX\ and older versions or original \LaTeX\\varepsilon\, or \LaTeX\\varepsilon\.

3.1 Compatibility with \LaTeX\\varepsilon/\LaTeX\\varepsilon

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

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

3.2 Support for Package ‘latexrelease’

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

A DOCSTRIP Options

By processing up\latex{} 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 up\LaTeX{} 2ε 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 up\LaTeX{} 2ε sources

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

By default, the description of up\LaTeX{} 2ε sources is written in Japanese. If you need English version, first save

\begin{verbatim}
\newif\ifJAPANESE
\end{verbatim}
as `uplatex.cfg`, and process `upldoc.tex` (`up\LaTeX{} 2\epsilon` newer than July 2016 is required).

Here we explain only difference between `pldoc.tex` (`p\LaTeX{} 2\epsilon`) and `upldoc.tex` (`up\LaTeX{} 2\epsilon`).

34 (\texttt{\textasciitilde pldoc})
35 \begin{filecontents}{upldoc.dic}
36 \begin{verbatim}
37 \end{verbatim}
38 \end{filecontents}

The document of `p\LaTeX{} 2\epsilon` requires `plext` package, since `plext.dtx` contains several examples of partial vertical writing. However, we don’t have such examples in `up\LaTeX{} 2\epsilon` files, so no need for it.

39 \documentclass{jltxdoc}
40 \%\usepackage{plext} % % comment out for up\LaTeX{}
41 \listfiles
42 \DoNotIndex{\def, \long, \edef, \gdef, \let, \global}
43 \DoNotIndex{\if, \ifnum, \ifdim, \ifmmode, \ifvmode, \ifhmode, \iftrue, \iffalse, \ifvoid, \ifx, \ifeof, \ifcase, \else, \or, \fi}
44 \DoNotIndex{\box, \copy, \setbox, \unvbox, \unhbox, \hbox, \vbox, \vtop, \vcenter}
45 \DoNotIndex{\@empty, \immediate, \write}
46 \DoNotIndex{\@empty, \immediate, \write}
47 \DoNotIndex{\@empty, \immediate, \write}
48 \DoNotIndex{\@empty, \immediate, \write}
49 \DoNotIndex{\@empty, \immediate, \write}
50 \DoNotIndex{\@empty, \immediate, \write}
51 \DoNotIndex{\@empty, \immediate, \write}
52 \DoNotIndex{\@empty, \immediate, \write}
53 \DoNotIndex{\@empty, \immediate, \write}
54 \DoNotIndex{\@empty, \immediate, \write}
55 \DoNotIndex{\@empty, \immediate, \write}
56 \DoNotIndex{\@empty, \immediate, \write}
57 \DoNotIndex{\@empty, \immediate, \write}
58 \DoNotIndex{\@empty, \immediate, \write}
59 \DoNotIndex{\@empty, \immediate, \write}
60 \ifJAPANESE
61 \IndexPrologue{\part*{索 引}}%
62 \IndexPrologue{\part*{索 引}}%
63 \IndexPrologue{\part*{索 引}}%
64 \IndexPrologue{\part*{索 引}}%
65 \IndexPrologue{\part*{索 引}}%
66 \IndexPrologue{\part*{索 引}}%
67 \IndexPrologue{\part*{索 引}}%
68 \else
69 \IndexPrologue{\part*{Index}}%
70 \IndexPrologue{\part*{Index}}%
71 \IndexPrologue{\part*{Index}}%
72 The italic numbers denote the pages where the corresponding entry
73 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}}
\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}
\makeatletter
\begin{document}
\let\patchdate=\@empty
\begingroup
\def\ProvidesFile#1[#2 #3]#4\def\uppatch@level#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
% -> 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
}{}%}
\def\ProvidesClass\ProvidesFile
\def\ProvidesPackage\ProvidesFile
\input{uplvers.dtx}
\input{uplfonts.dtx}
\input{ukinsoku.dtx}
\input{ujclasses.dtx}
\endgroup
\if\lastupd@te\@tempd@te{0000/00/00}\else
\date{Version \patchdate\break (last updated: \lastupd@te)}%
\fi
\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.

```
rm -f upldoc.toc upldoc.idx upldoc.glo
rm -f upldoc-en.toc upldoc-en.idx upldoc-en.glo
echo "" > ltxdoc.cfg
mendex -U -s gind.ist -d upldoc.dic -o upldoc.ind upldoc.idx
```

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.7

```
(m)endex -U -s gind.ist -d upldoc.dic -o upldoc.ind upldoc.idx
```

7The 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 \LaTeX\ 2\epsilon can be use without any change, so omitted here in \up\LaTeX\ 2\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 \LaTeX\ 2\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 πTEX with CJK extensions"
TUGboat issue 34:3, 2013.
Change History

2011/05/07 v1.0c-u00
  Created upl\TeX\ version based on
  platex.dtx 1997/01/29 v1.0c) . . 1

2016/05/08 v1.0h-u00
  Exclude uplpatch.ltx from the
  document (based on platex.dtx
  2016/05/08 v1.0h) . . . . . . . . . 8

2016/06/06 v1.0k-u01
  Update documents for upl\TeX\ . . 1

2016/06/19 v1.0l-u01
  Get the patch level from
  uplvers.dtx (based on
  platex.dtx 2016/06/19 v1.0l) . . 8

2016/08/26 v1.0m-u01
  Moved loading uplatex.cfg from
  uplcore.ltx to uplatex.ltx
  (based on platex.dtx
  2016/08/26 v1.0m) . . . . . . . . . 3

2017/11/29 v1.0t-u01
  New English documentation added
  (based on platex.dtx
  2017/11/29 v1.0q) . . . . . . . . . 1

2017/12/05 v1.0s-u01
  Moved loading default settings
  from uplcore.ltx to
  uplatex.ltx (based on
  platex.dtx 2017/12/05 v1.0s) . . 3

2017/12/10 v1.0s-u02
  Load plcore.ltx before
  uplcore.ltx (recent version of
  platex.dtx is assumed) . . . . . . 3

2018/04/08 v1.0w-u02
  Stop showing banner during
  format generation for safety
  (based on platex.dtx
  2018/04/08 v1.0w) . . . . . . . . . 3

2018/09/03 v1.0x-u02
  Update document. (based on
  platex.dtx 2018/09/03 v1.0x) . . 1

2018/09/22 v1.0y-u02
  Show last update info on
  upldoc.pdf (based on
  platex.dtx 2018/09/22 v1.0y) . . 8

2019/05/22 v1.0y-u03
  Update document. . . . . . . . . . 1

2020/09/28 v1.1b-u03
  Add hook after loading defs . . . . 3