About upLaTeX 2_ε

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upLaTeX is a Unicode version of Japanese pLaTeX 2_ε. This version is based on 'pLaTeX 2_ε Community Edition.'

pTeX is the most popular TeX engine in Japan and is widely used for a high-quality typesetting, even for commercial printing. However, pTeX 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 pTeX, upTeX, has been developed.[1] The Unicode pLaTeX format run on upTeX is called upLaTeX. Current upLaTeX is maintained by Japanese TeX Development Community,[2] in sync with pLaTeX community edition.[3] It runs on ε-upTeX, an engine with both upTeX and ε-pTeX features.

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.

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

Section 3 The compatibility note for users of the old version of upLATEX 2_ε or those of the original pLATEX 2_ε/LATEX 2_ε.

Appendix A Describes DOCSTRIP Options for this document.

Appendix B Description of 'upldoc.tex' (counterpart for 'source2e.tex' in LATEX 2_ε).

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

2　About Functions of pLATEX 2_ε

The structure of upLATEX 2_ε is similar to that of pLATEX 2_ε; 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`.

```
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⟩

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[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}}
```

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.

```
18 %\the\everyjob
```

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

```
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
```

32 ⟨/plcore⟩

The file `uplcore.ltx`, which provides modifications/extensions to make upLaTeX 2_ε, is a concatenation of stripped files below using DOCSTRIP program.

- `uplvers.dtx` defines the format version of upLaTeX 2_ε.

- `uplfonts.dtx` extends NFSS2 for Japanese font selection.

- `plcore.dtx` (the same content as pLaTeX 2_ε); defines other modifications to LaTeX 2_ε.

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 `uplfonts.dtx`.

Attention:

You can customize upLaTeX 2_ε 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 "2019-10-01u02") and the format name ("pLaTeX2e") of upLaTeX 2_ε are defined in `uplvers.dtx`. This is similar to pLaTeX 2_ε, which defines those in `plvers.dtx`.

2.1.2 NFSS2 Commands

upLaTeX 2_ε shares `plcore.dtx` with pLaTeX 2_ε, so the extensions of NFSS2 for selecting Japanese fonts are available.

2.1.3 Output Routine and Floats

upLaTeX 2_ε shares `plcore.dtx` with pLaTeX 2_ε, so the output routine and footnote macros will behave similar to pLaTeX 2_ε.

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[6]Older upLaTeX loaded `upldefs.ltx` inside `uplcore.ltx`; however, upLaTeX community edition newer than 2018 loads `upldefs.ltx` inside `uplatex.ltx`.

2.2 Classes and Packages

Classes and packages bundled with upLaTeX 2ε are based on those in original pLaTeX 2ε, and modified some parameters.

upLaTeX 2ε classes:

- ujarticle.cls, ujbook.cls, ujreport.cls

  Standard *yoko-kumi* (horizontal writing) classes; stripped from `ujclasses.dtx`. upLaTeX edition of jarticle.cls, jbook.cls and jreport.cls.

- utarticle.cls, utbook.cls, utreport.cls

  Standard *tate-kumi* (vertical writing) classes; stripped from `ujclasses.dtx`. upLaTeX edition of tarticle.cls, tbook.cls and treport.cls.

We don't provide upLaTeX edition of jltxdoc.cls, but the one from pLaTeX can be used also on upLaTeX without problem.

upLaTeX 2ε packages:

- uptrace.sty

  upLaTeX 2ε version of `tracefnt.sty`; the package `tracefnt.sty` overwrites upLaTeX 2ε-style NFSS2 commands, so `uptrace.sty` provides redefinitions to recover upLaTeX 2ε extensions. Stripped from `uplfonts.dtx`.

Other pLaTeX packages work also on upLaTeX.

3 Compatibility with Other Formats and Older Versions

Here we provide some information about the compatibility between current upLaTeX 2ε and older versions or original pLaTeX 2ε/LaTeX 2ε.

3.1 Compatibility with pLaTeX 2ε/LaTeX 2ε

upLaTeX 2ε is in most part upper compatible with pLaTeX 2ε, so you can move from pLaTeX 2ε to upLaTeX 2ε by simply replacing the document class and some macros. However, the default Japanese font metrics in upLaTeX 2ε is different from those in pLaTeX 2ε; therefore, you should not expect identical output from both pLaTeX 2ε and upLaTeX 2ε.

Note that upLaTeX is a new format, so we do *not* provide support for 2.09 compatibility mode. Follow the standard LaTeX 2_ε convention!

We hope that most classes and packages meant for LaTeX 2_ε/pLaTeX 2_ε works also for upLaTeX 2_ε without any modification. However for example, if a class or a package uses Kanji encoding 'JY1' or 'JT1' (default on pLaTeX 2_ε), an error complaining the mismatch of Kanji encoding might happen on upLaTeX, in which the default is 'JY2' and 'JT2.' In this case, we have to say that the class or package does not support upLaTeX 2_ε; 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 upLaTeX, but currently we don't need it; upLaTeX does not have any recent upLaTeX-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:

Option	Function
plcore	Generates a fragment of format sources
pldoc	Generates 'upldoc.tex' for typesetting upLaTeX 2_ε sources
shprog	Generates a shell script to process 'upldoc.tex'
Xins	Generates a DOCSTRIP batch file 'Xins.ins' for generating the above shell/perl scripts

B Documentation of upLaTeX 2_ε sources

The contents of 'upldoc.tex' for typesetting upLaTeX 2_ε sources is described here. Compared to individual processings, batch processing using 'upldoc.tex' prints also changes and an index.

By default, the description of upLaTeX 2_ε sources is written in Japanese. If you need English version, first save

```
\newif\ifJAPANESE
```

as `uplatex.cfg`, and process `upldoc.tex` (upLaTeX 2_ε newer than July 2016 is required).

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

```
33 ⟨*pldoc⟩
34 \begin{filecontents}{upldoc.dic}
35 西暦      せいれき
36 和暦      われき
37 \end{filecontents}
```

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

```
38 \documentclass{jltxdoc}
39 %\usepackage{plext} %% comment out for upLaTeX
40 \listfiles
41
42 \DoNotIndex{\def,\long,\edef,\xdef,\gdef,\let,\global}
43 \DoNotIndex{\if,\ifnum,\ifdim,\ifcat,\ifmmode,\ifvmode,\ifhmode,%
44              \iftrue,\iffalse,\ifvoid,\ifx,\ifeof,\ifcase,\else,\or,\fi}
45 \DoNotIndex{\box,\copy,\setbox,\unvbox,\unhbox,\hbox,%
46              \vbox,\vtop,\vcenter}
47 \DoNotIndex{\@empty,\immediate,\write}
48 \DoNotIndex{\egroup,\bgroup,\expandafter,\begingroup,\endgroup}
49 \DoNotIndex{\divide,\advance,\multiply,\count,\dimen}
50 \DoNotIndex{\relax,\space,\string}
51 \DoNotIndex{\csname,\endcsname,\@spaces,\openin,\openout,%
52              \closein,\closeout}
53 \DoNotIndex{\catcode,\endinput}
54 \DoNotIndex{\jobname,\message,\read,\the,\m@ne,\noexpand}
55 \DoNotIndex{\hsize,\vsize,\hskip,\vskip,\kern,\hfil,\hfill,\hss,\vss,\unskip}
56 \DoNotIndex{\m@ne,\z@,\z@skip,\@ne,\tw@,\p@,\@minus,\@plus}
57 \DoNotIndex{\dp,\wd,\ht,\setlength,\addtolength}
58 \DoNotIndex{\newcommand, \renewcommand}
59
60 \ifJAPANESE
61 \IndexPrologue{\part*{索 引}%
62                \markboth{索 引}{索 引}%
63                \addcontentsline{toc}{part}{索 引}%
64 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。
65 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。
66 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。}
67 \else
68 \IndexPrologue{\part*{Index}%
69                \markboth{Index}{Index}%
70                \addcontentsline{toc}{part}{Index}%
71 The italic numbers denote the pages where the corresponding entry
72 is described, numbers underlined point to the definition,
```

```
73 all others indicate the places where it is used.}
74 \fi
75 %
76 \ifJAPANESE
77 \GlossaryPrologue{\part*{変更履歴}%
78                   \markboth{変更履歴}{変更履歴}%
79                   \addcontentsline{toc}{part}{変更履歴}}
80 \else
81 \GlossaryPrologue{\part*{Change History}%
82                   \markboth{Change History}{Change History}%
83                   \addcontentsline{toc}{part}{Change History}}
84 \fi
85
86 \makeatletter
87 \def\changes@#1#2#3{%
88   \let\protect\@unexpandable@protect
89   \edef\@tempa{\noexpand\glossary{#2\space
90                \currentfile\space#1\levelchar
91                \ifx\saved@macroname\@empty
92                   \space\actualchar\generalname
93                \else
94                   \expandafter\@gobble
95                   \saved@macroname\actualchar
96                   \string\verb\quotechar*%
97                   \verbatimchar\saved@macroname
98                   \verbatimchar
99                \fi
100               :\levelchar #3}}%
101   \@tempa\endgroup\@esphack}
102 \renewcommand*\MacroFont{\fontencoding\encodingdefault
103               \fontfamily\ttdefault
104               \fontseries\mddefault
105               \fontshape\updefault
106               \small
107               \hfuzz 6pt\relax}
108 \renewcommand*\l@subsection{\@dottedtocline{2}{1.5em}{2.8em}}
109 \renewcommand*\l@subsubsection{\@dottedtocline{3}{3.8em}{3.4em}}
110 \makeatother
111 \RecordChanges
112 \CodelineIndex
113 \EnableCrossrefs
114 \setcounter{IndexColumns}{2}
115 \settowidth\MacroIndent{\ttfamily\scriptsize 000\ }
```

Set the title, authors and the date for this document.

```
116  \title{The \upLaTeXe\ Sources}
117  \author{Ken Nakano \& Japanese \TeX\ Development Community \& TTK}
118
119 % Get the (temporary) date and up-patch level from uplvers.dtx
120 \makeatletter
```

```
121 \let\patchdate=\@empty
122 \begingroup
123   \def\ProvidesFile#1[#2 #3]#4\def\uppatch@level#5{%
124     \date{#2}\xdef\patchdate{#5}\endinput}
125   \input{uplvers.dtx}
126 \endgroup
127
128 % Add the patch version if available.
129 \def\Xpatch{}
130 \ifx\patchdate\Xpatch\else
131   \edef\@date{\@date\space version \patchdate}
132 \fi
133
134 % Obtain the last update info, as upLaTeX does not change format date
135 % -> if successful, reconstruct the date completely
136 \def\lastupd@te{0000/00/00}
137 \begingroup
138   \def\ProvidesFile#1[#2 #3]{%
139     \def\@tempd@te{#2}\endinput
140     \@ifl@t@r{\@tempd@te}{\lastupd@te}{%
141       \global\let\lastupd@te\@tempd@te
142     }{}}
143   \let\ProvidesClass\ProvidesFile
144   \let\ProvidesPackage\ProvidesFile
145   \input{uplvers.dtx}
146   \input{uplfonts.dtx}
147   \input{ukinsoku.dtx}
148   \input{ujclasses.dtx}
149 \endgroup
150 \@ifl@t@r{\lastupd@te}{0000/00/00}{%
151   \date{Version \patchdate\break (last updated: \lastupd@te)}%
152 }{}
153 \makeatother
```

  Here starts the document body.

```
154 \begin{document}
155 \pagenumbering{roman}
156 \maketitle
157 \renewcommand\maketitle{}
158 \tableofcontents
159 \clearpage
160 \pagenumbering{arabic}
161
162 \DocInclude{uplvers}   % upLaTeX version
163
164 \DocInclude{uplfonts}  % NFSS2 commands
165
166 \DocInclude{ukinsoku}  % kinsoku parameter
167
168 \DocInclude{ujclasses} % Standard class
```

```
169
170 \StopEventually{\end{document}}
171
172 \clearpage
173 \pagestyle{headings}
174 % Make TeX shut up.
175 \hbadness=10000
176 \newcount\hbadness
177 \hfuzz=\maxdimen
178 %
179 \PrintChanges
180 \clearpage
181 %
182 \begingroup
183   \def\endash{--}
184   \catcode`\-\active
185   \def-{\futurelet\temp\indexdash}
186   \def\indexdash{\ifx\temp-\endash\fi}
187
188   \PrintIndex
189 \endgroup
190 \let\PrintChanges\relax
191 \let\PrintIndex\relax
192 \end{document}
193 ⟨/pldoc⟩
```

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 2_ε, so here we describe only the difference.

```
194 ⟨*shprog⟩
195 ⟨ja⟩rm -f upldoc.toc upldoc.idx upldoc.glo
196 ⟨en⟩rm -f upldoc-en.toc upldoc-en.idx upldoc-en.glo
197 echo "" > ltxdoc.cfg
198 ⟨ja⟩uplatex upldoc.tex
199 ⟨en⟩uplatex -jobname=upldoc-en upldoc.tex
```

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]

```
200 ⟨ja⟩mendex -U -s gind.ist -d upldoc.dic -o upldoc.ind upldoc.idx
```

---

[7]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.

```
201 ⟨en⟩mendex -U -s gind.ist -d upldoc.dic -o upldoc-en.ind upldoc-en.idx
202 ⟨ja⟩mendex -U -f -s gglo.ist -o upldoc.gls upldoc.glo
203 ⟨en⟩mendex -U -f -s gglo.ist -o upldoc-en.gls upldoc-en.glo
204 echo "\includeonly{}" > ltxdoc.cfg
205 ⟨ja⟩uplatex upldoc.tex
206 ⟨en⟩uplatex -jobname=upldoc-en upldoc.tex
207 echo "" > ltxdoc.cfg
208 ⟨ja⟩uplatex upldoc.tex
209 ⟨en⟩uplatex -jobname=upldoc-en upldoc.tex
210 # EOT
211 ⟨/shprog⟩
```

C.2 Perl Script `dstcheck.pl`

The one from pLaTeX 2$_\varepsilon$ can be use without any change, so omitted here in
upLaTeX 2$_\varepsilon$.

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 pLaTeX 2$_\varepsilon$.

```
212 ⟨*Xins⟩
213 \input docstrip
214 \keepsilent

215 {\catcode'#=12 \gdef\MetaPrefix{## }}

216 \declarepreamble\thispre
217 \endpreamble
218 \usepreamble\thispre

219 \declarepostamble\thispost
220 \endpostamble
221 \usepostamble\thispost

222 \generate{
223   \file{mkpldoc.sh}{\from{uplatex.dtx}{shprog,ja}}
224   \file{mkpldoc-en.sh}{\from{uplatex.dtx}{shprog,en}}
225 }
226 \endbatchfile
227 ⟨/Xins⟩
```

References

[1] Takuji Tanaka, UpTeX — Unicode version of pTeX with CJK extensions TUGboat issue 34:3, 2013.
(http://tug.org/TUGboat/tb34-3/tb108tanaka.pdf)

Change History

2011/05/07 v1.0c-u00
    Created upLaTeX version based on pLaTeX one (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 upLaTeX. . . 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 v1.0q-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 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