

xCJK2uni 宏包

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2013/08/17 v0.1

1 简介

xCJK2uni 是一个 L^AT_EX 宏包, 提供了将 CJK 文字转换成 Unicode 的功能。以宏包形式实现 gbk2uni 程序的功能, 使得使用 CJK 和 hyperref 宏包时, 可以得到正确的书签。并提供了 /ToUnicode 映射文件, 使得使用 GBK 等编码时, 配合 cmap 宏包, 用 pdfL^AT_EX 编译得到的 pdf 文件支持查找、复制和粘贴。

xCJK2uni 只适用于下一节说明的有效编码和以 pdfL^AT_EX 作为编译引擎的工作方式。

xCJK2uni 依赖 l3kernel。应该与 CJK 或 CCT 等配合使用, 但 xCJK2uni 不会自动引入它们。

2 基本命令

<code>\useCJKencmap</code>	<code>\useCJKencmap {<Bg5 Bg5+ GB GBK JIS KS>}</code>
----------------------------	---

设置当前的编码环境。以上是 xCJK2uni 支持的文字编码, 缺省使用 GBK。xCJK2uni 会在 CJK 环境内自动更新支持的编码。

<code>\CJKchartouni</code> ★	<code>\CJKchartouni {<单个 CJK 文字>}</code>
------------------------------	--

将文字转换成 16 进制形式的 Unicode。例如 `\CJKchartouni{一}` 将得到 4E00。将它展开两次就可以得到结果。

<code>\CJKsfdtouni</code> ★	<code>\CJKsfdtouni {<plane>} {<slot>}</code>
-----------------------------	--

`<plane>` 表示由 .sfd 文件定义的字体的编号, `<slot>` 表示在子字体中的位置, 这个命令将得到该坐标位置的 Unicode。将它展开两次就可以得到结果。如果在当前编码下, 该坐标位置不合法, 将展开为空。

3 代码实现

3.1 xCJK2uni

```
1 <*package>
2 <@@=CJKtu>
3 \pdfTeX_if_engine:F
4 {
5   \msg_new:nnn { xCJK2uni } { pdfLaTeX }
6   { The~xCJK2uni~package~is~only~supported~in~pdfTeX. }
7   \msg_critical:nn { xCJK2uni } { pdfLaTeX }
8 }
9 \tl_new:N \l__CJKtu_sfd_tl
10 \prop_new:N \c__CJKtu_sfd_prop
11 \seq_new:N \c__CJKtu_encoding_seq
12 \int_new:N \l__CJKtu_i_min_int
13 \int_new:N \l__CJKtu_i_max_int
14 \int_new:N \l__CJKtu_ii_min_int
15 \int_new:N \l__CJKtu_ii_max_int
16 \int_new:N \l__CJKtu_gap_begin_int
17 \int_new:N \l__CJKtu_gap_end_int
18 \int_new:N \l__CJKtu_plane_int
```

```

19 \int_set:Nn \l__CJKtu_i_max_int { "FE }
20 \int_set:Nn \l__CJKtu_ii_max_int { "FE }

\__CJKtu_set_enc:nnnnnn

21 \cs_new_protected_nopar:Npn \__CJKtu_set_enc:nnnnnn #1#2#3#4#5#6
22 {
23   \seq_put_right:Nn \c__CJKtu_encoding_seq {#1}
24   \prop_gput:Nnn \c__CJKtu_sfd_prop {#1} {#2}
25   \int_const:cn { c__CJKtu_ #1 _i_min_int } {#3}
26   \int_const:cn { c__CJKtu_ #1 _ii_min_int } {#4}
27   \tl_if_empty:nTF {#5}
28   {
29     \int_const:cn { c__CJKtu_ #1 _gap_begin_int }
30     { \l__CJKtu_ii_max_int + \c_one }
31     \int_const:cn { c__CJKtu_ #1 _gap_end_int }
32     { \use:c { c__CJKtu_ #1 _gap_begin_int } }
33     \int_const:cn { c__CJKtu_ #1 _plane_int }
34     { \l__CJKtu_ii_max_int - (#4) + \c_one }
35   }
36   {
37     \int_const:cn { c__CJKtu_ #1 _gap_begin_int } { #5 + \c_one }
38     \int_const:cn { c__CJKtu_ #1 _gap_end_int } {#6}
39     \int_const:cn { c__CJKtu_ #1 _plane_int }
40     { (#5) - (#4) + \l__CJKtu_ii_max_int - (#6) + \c_two }
41   }
42   \cs_if_exist_use:NNTF \CJKaddEncHook
43   { {#1} { \__CJKtu_enc_map:nn {#1} {#2} } }
44   {
45     \AtBeginDocument
46     {
47       \cs_if_exist_use:NT \CJKaddEncHook
48       { {#1} { \__CJKtu_enc_map:nn {#1} {#2} } }
49     }
50   }
51 }
(End definition for \__CJKtu_set_enc:nnnnnn.)

```

__CJKtu_enc_map:nn

```

52 \cs_new_protected_nopar:Npn \__CJKtu_enc_map:nn #1#2
53 {
54   \int_set_eq:Nc \l__CJKtu_i_min_int { c__CJKtu_ #1 _i_min_int }
55   \int_set_eq:Nc \l__CJKtu_ii_min_int { c__CJKtu_ #1 _ii_min_int }
56   \int_set_eq:Nc \l__CJKtu_gap_begin_int { c__CJKtu_ #1 _gap_begin_int }
57   \int_set_eq:Nc \l__CJKtu_gap_end_int { c__CJKtu_ #1 _gap_end_int }
58   \int_set_eq:Nc \l__CJKtu_plane_int { c__CJKtu_ #1 _plane_int }
59   \cs_if_exist:cF { CJKtu_ #1 _sfd_map:nn }
60   { \group_begin: \ExplSyntaxOn \file_input:n { xCJK2uni-#2.def } \group_end: }
61   \cs_set_eq:Nc \CJKtu_sfd_map:nn { CJKtu_ #1 _sfd_map:nn }
62 }
(End definition for \__CJKtu_enc_map:nn.)

```

__CJKtu_use_enc_map:n

```

63 \cs_new_protected_nopar:Npn \__CJKtu_use_enc_map:n #1
64 {
65   \prop_get:NxNTF \c__CJKtu_sfd_prop {#1} \l__CJKtu_sfd_tl
66   { \__CJKtu_enc_map:nn {#1} { \l__CJKtu_sfd_tl } }
67   { \msg_error:nnx { xCJK2uni } { invalid-encoding } {#1} }
68 }
69 \msg_new:nnn { xCJK2uni } { invalid-encoding }
70 {
71   The~encoding~`#1'~is~invalid.\\
72   Only~\seq_use:Nnnn \c__CJKtu_encoding_seq { ~and~ } { ,~ } { ,~and~ } ~
73   are~supported.
74 }
75 \cs_generate_variant:Nn \prop_get:NnNTF { Nx }

```

(End definition for `_CJKtu_use_enc_map:n`)

```

76 \_CJKtu_set_enc:nnnnnn { GB } { UGB } { "A1 } { "A1 } { } { }
77 \_CJKtu_set_enc:nnnnnn { JIS } { UJIS } { "A1 } { "A1 } { } { }
78 \_CJKtu_set_enc:nnnnnn { KS } { UKS } { "A1 } { "A1 } { } { }
79 \_CJKtu_set_enc:nnnnnn { Bg5 } { UBig5 } { "A1 } { "40 } { "7E } { "A1 }
80 \_CJKtu_set_enc:nnnnnn { Bg5+ } { UBg5plus } { "81 } { "40 } { "7E } { "80 }
81 \_CJKtu_set_enc:nnnnnn { GBK } { UGBK } { "81 } { "40 } { "7E } { "80 }

```

`_CJKtu_sfd_to_unicode:nn`

```

82 \cs_new_nopar:Npn \_CJKtu_sfd_to_unicode:nn #1#2
83 {
84   \tex_romannumeral:D -`0 \exp_last_unbraced:Nf
85   \_CJKtu_get_unicode:w \CJKtu_sfd_map:nn {#1} {#2} \s__stop
86 }

```

(End definition for `_CJKtu_sfd_to_unicode:nn`)

`_CJKtu_get_unicode:w`

```

87 \cs_new_nopar:Npn \_CJKtu_get_unicode:w #1 \s__stop
88 { \tl_if_empty:nF {#1} { \_CJKtu_get_unicode_aux:w #1 \q_stop } }
89 \cs_new_nopar:Npn \_CJKtu_get_unicode_aux:w #1 \or: #2 \q_stop
90 { \or: #2 \exp_stop_f: #1 }

```

(End definition for `_CJKtu_get_unicode:w`)

`_CJKtu_char_to_unicode:n`

```

91 \group_begin:
92 \char_set_catcode_active:n { "7F }
93 \cs_new_nopar:Npn \_CJKtu_char_to_unicode:n #1
94 {
95   \tex_romannumeral:D -`0
96   \int_compare:nNnTF { \tl_count:n {#1} } = \c_two
97   { \CJKtu_byte:NN #1 }
98   {
99     \tl_if_head_eq_meaning:nNTF {#1} ^^7f
100     { \_CJKtu_byte:wNnw #1 }
101     { \_CJKtu_encoding_error: }
102   }
103 }
104 \cs_new_nopar:Npn \_CJKtu_byte:wNnw ^^7f #1 ^^7f #2 ^^7f
105 { \CJKtu_byte_map:nn { `#1 } {#2} }
106 \cs_new_nopar:Npn \_CJKtu_byte:Nnw #1 ^^7f #2 ^^7f
107 { \CJKtu_byte_map:nn { `#1 } {#2} }

```

(End definition for `_CJKtu_char_to_unicode:n`)

`_CJKtu_bookmarks_hook:`

```

108 \cs_new_protected_nopar:Npn \_CJKtu_bookmarks_hook:
109 {
110   \cs_set_eq:NN ^^7f \_CJKtu_byte:Nnw
111   \cs_set_eq:NN \CJK@XX \CJKtu_byte:NN
112   \cs_set_eq:NN \CJKchar \_CJKtu_byte:wnn
113   \cs_set_eq:NN \CCTchar \CJKtu_byte:nn
114   \cs_set_eq:NN \@CCTSetChar \_CJKtu_CCT_byte:NNN
115   \cs_set_eq:NN \_CJKtu_get_unicode:n \_CJKtu_UTF_xvi_be:n
116 }
117 \group_end:

```

(End definition for `_CJKtu_bookmarks_hook:.`)

`\CJKtu_byte:NN`

`_CJKtu_CCT_byte:NNN`

```

118 \cs_new_nopar:Npn \CJKtu_byte:NN #1#2
119 { \CJKtu_byte:nn { `#1 } { `#2 } }
120 \cs_new_nopar:Npn \_CJKtu_CCT_byte:NNN #1#2#3
121 { \CJKtu_byte:nn { `#1 } { `#3 } }

```

(End definition for `\CJKtu_byte:NN` and `_CJKtu_CCT_byte:NNN`.)

`_CJKtu_byte:wnn`

```

122 \cs_new_nopar:Npn \_CJKtu_byte:wnn #1# { \CJKtu_byte:nn }

```

(End definition for `_CJKtu_byte:wnn`.)

\CJKtu_byte:nn

```
123 \cs_new_nopar:Npn \CJKtu_byte:nn #1#2
124 {
125   \int_compare:nTF { \l__CJKtu_i_min_int <= #1 <= \l__CJKtu_i_max_int }
126   {
127     \int_compare:nTF { \l__CJKtu_ii_min_int <= #2 < \l__CJKtu_gap_begin_int }
128     { \CJKtu_byte_map:nn {#1} {#2} }
129     {
130       \int_compare:nTF
131       { \l__CJKtu_gap_end_int <= #2 <= \l__CJKtu_ii_max_int }
132       { \CJKtu_byte_map:nn {#1} {#2} }
133       { \__CJKtu_encoding_error: }
134     }
135   }
136   { \__CJKtu_encoding_error: }
137 }
138 \cs_new_nopar:Npn \__CJKtu_encoding_error:
139 { \exp_stop_f: \__msg_expandable_error:n { Wrong~encoding~scheme. } }
(End definition for \CJKtu_byte:nn.)
```

\CJKtu_byte_map:nn

```
140 \cs_new_nopar:Npn \CJKtu_byte_map:nn #1#2
141 {
142   \exp_args:Nf \__CJKtu_index_map:n
143   {
144     \int_eval:n
145     {
146       ( #1 - \l__CJKtu_i_min_int ) * \l__CJKtu_plane_int
147       + (#2) - \l__CJKtu_ii_min_int
148       \int_compare:nNfF {#2} < \l__CJKtu_gap_begin_int
149       { + \l__CJKtu_gap_begin_int - \l__CJKtu_gap_end_int }
150     }
151   }
152 }
(End definition for \CJKtu_byte_map:nn.)
```

__CJKtu_index_map:n

```
153 \cs_new_nopar:Npn \__CJKtu_index_map:n #1
154 {
155   \__CJKtu_get_unicode:n
156   {
157     \CJKtu_sfd_map:nn
158     { \int_div_truncate:nn {#1} { \c_two_hundred_fifty_six } + \c_one }
159     { \int_mod:nn {#1} { \c_two_hundred_fifty_six } }
160   }
161 }
(End definition for \__CJKtu_index_map:n.)
```

__CJKtu_get_unicode:n

```
162 \cs_new_nopar:Npn \__CJKtu_get_unicode:n #1
163 { \exp_last_unbraced:Nf \__CJKtu_get_unicode:w #1 \s__stop }
(End definition for \__CJKtu_get_unicode:n.)
```

__CJKtu_UTF_xvi_be:n

```
164 \cs_new_nopar:Npn \__CJKtu_UTF_xvi_be:n #1
165 { \exp_args:Nf \__CJKtu_UTF_xvi_aux:n { \int_eval:n { "#1 } } }
166 \cs_new_nopar:Npn \__CJKtu_UTF_xvi_aux:n #1
167 {
168   \HyPsd@DecimalToOctalFirst
169   { \int_div_truncate:nn {#1} { \c_two_hundred_fifty_six } }
170   \HyPsd@DecimalToOctalSecond
171   { \int_mod:nn {#1} { \c_two_hundred_fifty_six } }
172 }
```

(End definition for `_CJktu_UTF_xvi_be:n`.)

```

173 \cs_if_exist_use:NTF \hypersetup { { unicode } }
174 { \PassOptionsToPackage { unicode } { hyperref } }
175 \AtBeginDocument
176 {
177   \@ifpackageloaded { CJKutf8 }
178   { \msg_warning:nn { xCJK2uni } { UTF-8-encoding } }
179   {
180     \cs_if_free:NF \pdfstringdefDisableCommands
181     {
182       \hypersetup { CJKbookmarks = false }
183       \pdfstringdefDisableCommands { \_CJktu_bookmarks_hook: }
184     }
185   }
186 }
187 \msg_new:nnn { xCJK2uni } { UTF-8-encoding }
188 { It~is~not~necessary~to~load~xCJK2uni~in~UTF-8~encoding. }

```

`\useCJKenomap`

`\CJKchartouni`

`\CJKsfdtouni`

```

189 \cs_new_eq:NN \useCJKenomap \_CJktu_use_enc_map:n
190 \cs_new_eq:NN \CJKchartouni \_CJktu_char_to_unicode:n
191 \cs_new_eq:NN \CJKsfdtouni \_CJktu_sfd_to_unicode:nn

```

(End definition for `\useCJKenomap`, `\CJKchartouni`, and `\CJKsfdtouni`. These functions are documented on page 1.)

```

192 \useCJKenomap { GBK }

```

```

193 \</package>

```

3.2 xCJK2uni-make

```

194 \<*make>
195 \tl_const:Nx \c__CJktu_hash_str { \iow_char:N \# }
196 \tl_const:Nx \c__CJktu_lbrace_str { \iow_char:N \{ }
197 \tl_const:Nx \c__CJktu_rbrace_str { \iow_char:N \} }
198 \tl_const:Nx \c__CJktu_backslash_str { \iow_char:N \\ }
199 \tl_const:Nx \c__CJktu_indent_str
200 { \c_catcode_other_space_tl \c_catcode_other_space_tl }
201 \ior_new:N \g__CJktu_sfd_ior
202 \iow_new:N \g__CJktu_sfd_map_iow
203 \iow_new:N \g__CJktu_sfd_cmap_iow
204 \seq_new:N \l__CJktu_sfd_plane_seq
205 \seq_new:N \l__CJktu_sfd_line_seq
206 \tl_new:N \l__CJktu_sfd_plane_tl
207 \tl_new:N \l__CJktu_cmap_block_tl
208 \int_new:N \l__CJktu_sfd_index_int

```

`\c__CJktu_sfd_map_prop`

```

209 \prop_new:N \c__CJktu_sfd_map_prop
210 \prop_gput:Nnn \c__CJktu_sfd_map_prop { GB } { { 10 } { UGB } }
211 \prop_gput:Nnn \c__CJktu_sfd_map_prop { JIS } { { 40 } { UJIS } }
212 \prop_gput:Nnn \c__CJktu_sfd_map_prop { KS } { { 60 } { UKS } }
213 \prop_gput:Nnn \c__CJktu_sfd_map_prop { Bg5 } { { 00 } { UBig5 } }
214 \prop_gput:Nnn \c__CJktu_sfd_map_prop { Bg5+ } { { 09 } { UBg5plus } }
215 \prop_gput:Nnn \c__CJktu_sfd_map_prop { GBK } { { 19 } { UGBK } }

```

(End definition for `\c__CJktu_sfd_map_prop`.)

`_CJktu_write_file:nnn`

```

216 \cs_new_protected_nopar:Npn \_CJktu_write_file:nnn #1#2#3
217 {
218   \group_begin:
219   \file_path_include:n { sfd/ }
220   \ior_open:NnTF \g__CJktu_sfd_ior { #3.sfd }
221   {
222     \group_end:
223     \seq_clear:N \l__CJktu_sfd_plane_seq
224     \iow_open:Nn \g__CJktu_sfd_map_iow { xCJK2uni-#3.def }
225     \_CJktu_write_sfd_map_header:nn {#1} {#3}
226     \ior_str_map_inline:Nn \g__CJktu_sfd_ior

```

```

227     { \str_if_eq:nnT {##1} { 00 ~ 0x0000_0x00FF } { \ior_map_break: } }
228 \ior_str_map_inline:Nn \g__CJKtu_sfd_ior
229 {
230     \tl_if_blank:nTF {##1}
231     {
232         \ior_map_break:n
233         {
234             \__CJKtu_write_sfd_map_trailer:n {#3}
235             \__CJKtu_write_cmap_file:n {#2}
236         }
237     }
238     { \__CJKtu_read_sfd_line:nnn {##1} {#1} {#2} }
239 }
240 \iow_close:N \g__CJKtu_sfd_cmap_iow
241 \iow_close:N \g__CJKtu_sfd_map_iow
242 \ior_close:N \g__CJKtu_sfd_ior
243 \seq_clear:N \l__CJKtu_sfd_plane_seq
244 \seq_clear:N \l__CJKtu_sfd_line_seq
245 }
246 {
247     \group_end:
248     \msg_critical:nxxx { xCJK2uni } { file-not-found } {#1} { #3.sfd }
249 }
250 }
251 \msg_new:nnn { xCJK2uni } { file-not-found }
252 {
253     SFD file~`#2'~for~encoding~`#1'~not~found.\\
254     xCJK2uni~will~not~work!
255 }
(End definition for \__CJKtu_write_file:nnn.)

```

```

\__CJKtu_read_sfd_line:n
\__CJKtu_read_sfd_line:nn 256 \group_begin:
257 \char_set_lccode:nn { \c_zero } { `` }
258 \char_set_lccode:nn { \c_one } { `x }
259 \char_set_catcode_other:n { \c_zero }
260 \char_set_catcode_other:n { \c_one }
261 \tl_to_lowercase:n
262 {
263     \group_end:
264     \cs_new_protected_nopar:Npn \__CJKtu_read_sfd_line:nnn #1#2#3
265     { \__CJKtu_read_sfd_line:nwnn #1 ^^00 \q_nil \q_stop {#2} {#3} }
266     \cs_new_protected_nopar:Npn \__CJKtu_read_sfd_line:nwnn
267     #1 0^^01 #2 ^^00 #3 \q_stop #4#5
268     { \__CJKtu_read_sfd_line:nnnnn {#1} { 0^^01 } {#2} {#4} {#5} }
269 }
(End definition for \__CJKtu_read_sfd_line:n and \__CJKtu_read_sfd_line:nn.)

```

```

__CJKtu_read_sfd_line:nnnnn
270 \cs_new_protected_nopar:Npn \__CJKtu_read_sfd_line:nnnnn #1#2#3#4#5
271 {
272     \tl_if_blank:nF {#1}
273     {
274         \seq_if_empty:NF \l__CJKtu_sfd_plane_seq
275         {
276             \iow_now:Nx \g__CJKtu_sfd_map_iow
277             {
278                 \c__CJKtu_indent_str \c__CJKtu_indent_str
279                 \token_to_str:N \fi: \iow_newline:
280                 \c__CJKtu_indent_str \c__CJKtu_rbrace_str
281             }
282             \__CJKtu_write_cmap_file:n {#5}
283         }
284         \__CJKtu_write_plane_map:nn {#1} {#4}
285         \tl_set:Nx \l__CJKtu_sfd_plane_tl { \tl_trim_spaces:n {#1} }
286     }
287     \seq_set_split:Nnn \l__CJKtu_sfd_line_seq {#2} {#3}
288     \seq_concat:NNN \l__CJKtu_sfd_plane_seq

```

```

289 \l__CJKtu_sfd_plane_seq \l__CJKtu_sfd_line_seq
290 \iow_now:Nx \g__CJKtu_sfd_map_iow
291 {
292   \c__CJKtu_indent_str \c__CJKtu_indent_str \c__CJKtu_indent_str
293   \seq_use:Nnnn \l__CJKtu_sfd_line_seq { \or: } { \or: } { \or: }
294   \token_to_str:N \or:
295 }
296 }
(End definition for \__CJKtu_read_sfd_line:nnnnn)

```

__CJKtu_write_plane_map:nn

```

297 \cs_new_protected_nopar:Npn \__CJKtu_write_plane_map:nn #1#2
298 {
299   \iow_now:Nx \g__CJKtu_sfd_map_iow
300   {
301     \cs_new_nopar:cpn { ~ __CJKtu_ #2 _sfd_map_ \int_eval:n {#1} :n ~ } ~
302     \c__CJKtu_hash_str 1 \iow_newline:
303     \c__CJKtu_indent_str \c__CJKtu_lbrace_str \iow_newline:
304     \c__CJKtu_indent_str \c__CJKtu_indent_str
305     \exp_not:N \if_case:w \etex_numexpr:D
306     \c__CJKtu_hash_str 1 ~ \token_to_str:N \scan_stop:
307   }
308 }
(End definition for \__CJKtu_write_plane_map:nn)

```

__CJKtu_write_cmap_file:n

```

309 \cs_new_protected_nopar:Npn \__CJKtu_write_cmap_file:n #1
310 {
311   \tl_clear:N \l__CJKtu_cmap_block_tl
312   \int_zero:N \l__CJKtu_sfd_index_int
313   \iow_open:Nn \g__CJKtu_sfd_cmap_iow { c #1 \l__CJKtu_sfd_plane_tl .cmap }
314   \__CJKtu_write_cmap_header:nn { C #1 } { \l__CJKtu_sfd_plane_tl }
315   \iow_now:Nx \g__CJKtu_sfd_cmap_iow
316   {
317     \iow_newline:
318     1~begincodespacerrange \iow_newline:
319     \c__CJKtu_indent_str < 00 > ~
320     <
321     \int_to_hexadecimal:n
322     { \seq_count:N \l__CJKtu_sfd_plane_seq - \c_one }
323     > \iow_newline:
324     endcodespacerrange
325   }
326   \seq_map_function:NN \l__CJKtu_sfd_plane_seq \__CJKtu_write_cmap_body:n
327   \tl_if_empty:NF \l__CJKtu_cmap_block_tl
328   {
329     \iow_now:Nx \g__CJKtu_sfd_cmap_iow
330     {
331       \iow_newline:
332       \int_mod:nn { \l__CJKtu_sfd_index_int } { \c_one_hundred } ~
333       beginbfchar \iow_newline:
334       \l__CJKtu_cmap_block_tl
335       endbfchar
336     }
337   }
338   \__CJKtu_write_cmap_trailer:
339   \seq_clear:N \l__CJKtu_sfd_plane_seq
340 }
(End definition for \__CJKtu_write_cmap_file:n)

```

__CJKtu_write_cmap_body:n

```

341 \cs_new_protected_nopar:Npn \__CJKtu_write_cmap_body:n #1
342 {
343   \int_case:nnTF { \l__CJKtu_sfd_index_int }
344   { { 99 } { } { 199 } { } }
345   {
346     \iow_now:Nx \g__CJKtu_sfd_cmap_iow

```

```

347     {
348         \iow_newline:
349         100 ~ beginbfchar \iow_newline:
350         \l__CJKtu_cmap_block_tl
351         < \int_to_hexadecimal:n { \l__CJKtu_sfd_index_int } > ~
352         <#1> \iow_newline:
353         endbfchar
354     }
355     \tl_clear:N \l__CJKtu_cmap_block_tl
356 }
357 {
358     \tl_put_right:Nx \l__CJKtu_cmap_block_tl
359     {
360         <
361         \int_compare:nNnF \l__CJKtu_sfd_index_int > \c_fifteen { 0 }
362         \int_to_hexadecimal:n { \l__CJKtu_sfd_index_int }
363         > ~ <#1> \iow_newline:
364     }
365 }
366 \int_incr:N \l__CJKtu_sfd_index_int
367 }
(End definition for \__CJKtu_write_cmap_body:n.)

```

__CJKtu_write_sfd_map_header:nn

```

368 \group_begin:
369 \char_set_catcode_other:N \%
370 \cs_new_protected_nopar:Npn \__CJKtu_write_sfd_map_header:nn #1#2
371 {
372     \iow_now:Nx \g__CJKtu_sfd_map_iow
373     {
374         %% \iow_newline:
375         %%~This~is~file~~xCJK2uni-#2.def',\iow_newline:
376         %%~generated~from~file~~#2.sfd'~by~~xCJK2uni-make.ltx'.\iow_newline:
377         %% \iow_newline:
378         \cs_new_nopar:cpn { ~ CJKtu_#1_sfd_map:nn ~ } ~ \c__CJKtu_hash_str 1
379         \iow_newline: \c__CJKtu_indent_str \c__CJKtu_lbrace_str \iow_newline:
380         \c__CJKtu_indent_str \c__CJKtu_indent_str
381         \token_to_str:N \cs_if_exist_use:cF
382         \iow_newline: \c__CJKtu_indent_str \c__CJKtu_indent_str \c__CJKtu_indent_str
383         { ~ __CJKtu_#1_sfd_map_ ~ \exp_not:N \int_eval:n { \c__CJKtu_hash_str 1 } ~ :n ~}
384         \iow_newline: \c__CJKtu_indent_str \c__CJKtu_indent_str \c__CJKtu_indent_str
385         { ~ \exp_not:N \use_none:n } \iow_newline:
386         \c__CJKtu_indent_str \c__CJKtu_rbrace_str
387     }
388 }
(End definition for \__CJKtu_write_sfd_map_header:nn.)

```

__CJKtu_write_sfd_map_trailer:n

```

389 \cs_new_protected_nopar:Npn \__CJKtu_write_sfd_map_trailer:n #1
390 {
391     \iow_now:Nx \g__CJKtu_sfd_map_iow
392     {
393         \c__CJKtu_indent_str \c__CJKtu_indent_str
394         \token_to_str:N \fi: \iow_newline:
395         \c__CJKtu_indent_str \c__CJKtu_rbrace_str \iow_newline:
396         %% \iow_newline:
397         %%~End~of~file~~xCJK2uni-#1.def'.
398     }
399 }
(End definition for \__CJKtu_write_sfd_map_trailer:n.)

```

__CJKtu_write_cmap_header:nn

```

400 \cs_new_protected_nopar:Npn \__CJKtu_write_cmap_header:nn #1#2
401 {
402     \iow_now:Nx \g__CJKtu_sfd_cmap_iow
403     {
404         %!PS-Adobe-3.0~Resource-CMap \iow_newline:

```



```

405      %%DocumentNeededResources:~ProcSet~(CIDInit) \iow_newline:
406      %%IncludeResource:~ProcSet~(CIDInit) \iow_newline:
407      %%BeginResource:~CMap~(TeX-#1-#2-0) \iow_newline:
408      %%Title:~(TeX-#1-#2-0~TeX~#1-#2~0) \iow_newline:
409      %%Version:~1.000 \iow_newline:
410      %%EndComments \iow_newline: \iow_newline:
411      /CIDInit~/ProcSet~findresource~begin \iow_newline: \iow_newline:
412      12~dict~begin \iow_newline: \iow_newline:
413      begincmap \iow_newline: \iow_newline:
414      /CIDSystemInfo~3~dict~dup~begin \iow_newline:
415      \c__CJKtu_indent_str /Registry~(TeX)~def \iow_newline:
416      \c__CJKtu_indent_str /Ordering~(#1-#2)~def \iow_newline:
417      \c__CJKtu_indent_str /Supplement~0~def \iow_newline:
418      end~def \iow_newline: \iow_newline:
419      /CMapName~/TeX-#1-#2-0~def \iow_newline:
420      /CMapVersion~1.000~def \iow_newline:
421      /CMapType~2~def \iow_newline: \iow_newline:
422      /WMode~0~def
423    }
424  }

```

(End definition for \c__CJKtu_write_cmap_header:nn.)

__CJKtu_write_cmap_trailer:

```

425 \cs_new_protected_nopar:Npx __CJKtu_write_cmap_trailer:
426 {
427   \iow_now:Nn \g__CJKtu_sfd_cmap_iow
428   {
429     \iow_newline:
430     endcmap \iow_newline:
431     CMapName~currentdict~/CMap defineresource~pop \iow_newline:
432     end \iow_newline:
433     end \iow_newline: \iow_newline:
434     %%EndResource \iow_newline:
435     %%EOF
436   }
437 }
438 \group_end:

```

(End definition for \c__CJKtu_write_cmap_trailer:.)

```

439 \prop_map_inline:Nn \c__CJKtu_sfd_map_prop
440 { \c__CJKtu_write_file:nnn {#1} #2 }
441 \tex_end:D
442 </make>

```

代码索引

斜体的数字表示对应项说明所在的页码,下划线的数字表示定义所在的代码行号,而直立的数字表示对应项使用时所在的行号。

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