

作りましょう 0.11

パラメタ方式フォントファミリ
校とプリティプリントのソース

Tsukurimashou 0.11

Parametric Font Family
Proofs and pretty-printed
source code

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Proofs and pretty-printed source code for Tsukurimashou
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Volume XV

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HANG

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JAMO

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JAMO

hglextb.mp

HGLE

mande-bt.mp

BT

mande-do.mp

DO

mande-sm.mp

SM

hglpage.mp

HGLP

mande-11.mp

11

mande-31.mp

31

mande-a9.mp

A9

mande-ac.mp

AC

hangul.mp

HANG

```
1 %
2 % Hangul infrastructure for Mandeubsida
3 % Copyright (C) 2011, 2013, 2021 Matthew Skala
4 %
5-29 [Standard copyright notice]
30
31 inclusion_lock(hangul);
32
33 _____
34
35 input buildkanji.mp;
36
37 pair hgbox_ll,hgbox_ul,hgbox_lr,hgbox_ur;
38
39 hgbox_ll=(50,-50);
40 hgbox_ul=(50,850);
41 hgbox_lr=(950,50);
42 hgbox_ur=(950,850);
43
44 pair hgbox_lb,hgbox_rb,hgbox_ub,hgbox_db;
45
46 hgbox_lb=0.5[hgbox_ll,hgbox_ul];
47 hgbox_rb=0.5[hgbox_lr,hgbox_ur];
48 hgbox_ub=0.5[hgbox_ul,hgbox_ur];
49 hgbox_db=0.5[hgbox_ll,hgbox_lr];
50
51 % return a translate-and-scale (no rotation or skew) transform that takes
52 % the (50,850)-(950,-50) square to the specified upper left and lower
53 % right coordinates
54 vardef hxf(expr ul,lr) =
55   begingroup
56     save rval;
57     transform rval;
58     hgbox_ul transformed rval=ul;
59     hgbox_lr transformed rval=lr;
60     hgbox_ll transformed rval=(xpart ul,ypart lr);
61     rval
62   endgroup
63 enddef;
64
65 vardef hxf_inout(expr iotype,ixf,oxf) =
66   begingroup
67     save rval,vv,hv;
68     transform rval;
69     pair vv,hv;
70     vv=(hgbox_ul transformed oxf)-(hgbox_ll transformed oxf);
```

```

71   hv=(hgbox_lr transformed oxf)-(hgbox_ll transformed oxf);
72   (hgbox_ul transformed rval)-(hgbox_ll transformed rval)=
73     whatever*vv;
74   (hgbox_lr transformed rval)-(hgbox_ll transformed rval)=
75     whatever*hv;
76   hgbox_rb transformed rval=whatever*vv+(hgbox_rb transformed
77     if (iotype mod 2)=1: oxf else: ixf fi);
78   hgbox_ub transformed rval=whatever*hv+(hgbox_ub transformed
79     if (iotype mod 4)>=2: oxf else: ixf fi);
80   hgbox_lb transformed rval=whatever*vv+(hgbox_lb transformed
81     if (iotype mod 8)>=4: oxf else: ixf fi);
82   hgbox_db transformed rval=whatever*hv+(hgbox_db transformed
83     if iotype>=8: oxf else: ixf fi);
84   rval
85 endgroup
86 endif;
87
88
89
90 % Much useful information about how Unicode encodes hangul syllables is
91 % at http://www.uni-graz.at/~katzer/korean\_hangul\_unicode.html , and
92 % I'm following that source's nomenclature of "lead, vowel, tail"
93
94 % jamo IDs used in the table:
95 % 100+ lead
96 % 300+ vowel
97 % 500+ tail
98 % add 100 for alternate form, which is usually the one used on the left in
99 % multi-consonant clusters (like "leftrad" or "lift_skirt" in kanji)
100
101 string hangul.jamo[]code;
102 boolean hangul.jamo[]invokes__alternate;
103
104 % fill in default values for jamo - saves typing
105 vardef hangul.fill_in__jamo(expr jid) =
106   if unknown hangul.jamo[jid]code: hangul.jamo[jid]code="jamo.bigx"; fi;
107   if unknown hangul.jamo[jid]w: hangul.jamo[jid]w=4; fi;
108   if unknown hangul.jamo[jid]h: hangul.jamo[jid]h=4; fi;
109   if unknown hangul.jamo[jid]lb: hangul.jamo[jid]lb=50; fi;
110   if unknown hangul.jamo[jid]rb: hangul.jamo[jid]rb=950; fi;
111   if unknown hangul.jamo[jid]ub: hangul.jamo[jid]ub=850; fi;
112   if unknown hangul.jamo[jid]db: hangul.jamo[jid]db=-50; fi;
113   if unknown hangul.jamo[jid]invokes__alternate:
114     hangul.jamo[jid]invokes__alternate=true;
115   fi;
116 endif;
117
118

```


Jamo Combining Operations

```

120 % JAMO COMBINING OPERATIONS
121
122 % calling convention: hangul macros generally take a final set of
123 % parentheses containing a vowel ID and two transforms, ixf and oxf.
124 % The ixf transform will transform the (50;50) to (950,850) square into
125 % where the jamo (or combination thereof) should be placed. The oxf
126 % transform transforms that same square into a possibly-larger space
127 % representing limits created by adjacent jamo; this allows for parts
128 % of jamo that may extend into the adjacent jamo's space conditionally
129 % on the shape of the adjacent jamo.
130 %
131 % The "id" family of arguments are jamo IDs pointing into the hangul.jamo
132 % tables.
133
134 vardef hangul.combine.lr(expr lid,rid)(expr vow,ixf,oxf) =
135   % put in default values if necessary
136   hangul.fill_in_jamo(lid);
137   hangul.fill_in_jamo(rid);
138
139   % set up transform variables
140   begingroup
141     save lixf,loxf,rixf,roxf;
142     transform lixf,loxf,rixf,roxf;
143
144     % left inner transform
145     hgbox_ul transformed lixf=hgbox_ul transformed ixf;
146     hgbox_ll transformed lixf=hgbox_ll transformed ixf;
147     if hangul.jamo[lid]w+hangul.jamo[rid]w=0:
148       hgbox_lr transformed lixf=(0.5[hgbox_ll,hgbox_lr]) transformed ixf;
149     else:
150       hgbox_lr transformed lixf=
151         ((hangul.jamo[lid]w/(hangul.jamo[lid]w+hangul.jamo[rid]w))
152          [hgbox_ll,hgbox_lr]) transformed ixf;
153     fi;
154
155     % right inner transform
156     hgbox_ur transformed rixf=hgbox_ur transformed ixf;
157     hgbox_lr transformed rixf=hgbox_lr transformed ixf;
158     hgbox_ll transformed rixf=hgbox_lr transformed lixf;
159
160     % left outer transform
161     (hgbox_ul transformed loxf)-(hgbox_ll transformed loxf)=
162       whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
163     (hgbox_lr transformed loxf)-(hgbox_ll transformed loxf)=

```

```

164     whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
165     (hgbox_lb transformed loxf)=
166     (whatever[hgbox_ll,hgbox_ul]) transformed oxf;
167     (hgbox_rb transformed loxf)=
168     (hangul.jamo[rid]lb,400) transformed rixf
169     +whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
170     (hgbox_ub transformed loxf)=
171     (whatever[hgbox_ul,hgbox_ur]) transformed oxf;
172     (hgbox_db transformed loxf)=
173     (whatever[hgbox_ll,hgbox_lr]) transformed oxf;
174
175     % right outer transform
176     (hgbox_ul transformed roxf)-(hgbox_ll transformed roxf)=
177     whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
178     (hgbox_lr transformed roxf)-(hgbox_ll transformed roxf)=
179     whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
180     (hgbox_lb transformed roxf)=
181     (hangul.jamo[lid]rb,400) transformed lixf
182     +whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
183     (hgbox_rb transformed roxf)=
184     (whatever[hgbox_lr,hgbox_ur]) transformed oxf;
185     (hgbox_ub transformed roxf)=
186     (whatever[hgbox_ul,hgbox_ur]) transformed oxf;
187     (hgbox_db transformed roxf)=
188     (whatever[hgbox_ll,hgbox_lr]) transformed oxf;
189
190     % draw the contents
191     hangul.scantokens hangul.jamo[lid]code (vow,lixf,loxf);
192     hangul.scantokens hangul.jamo[rid]code (vow,rixf,roxf);
193 endgroup;
194 endif;
195
196 vardef hangul.combine.lcr(expr lid,cid,rid)(expr vow,ixf,oxf) =
197 % put in default values if necessary
198 hangul.fill_in_jamo(lid);
199 hangul.fill_in_jamo(cid);
200 hangul.fill_in_jamo(rid);
201
202 % set up transform variables
203 begingroup
204 save lixf,loxf,cixf,coxf,rixf,roxf;
205 transform lixf,loxf,cixf,coxf,rixf,roxf;
206
207 % left inner transform
208 hgbox_ul transformed lixf=hgbox_ul transformed ixf;
209 hgbox_ll transformed lixf=hgbox_ll transformed ixf;
210 if hangul.jamo[lid]w+hangul.jamo[cid]w+hangul.jamo[rid]w=0:
211     hgbox_lr transformed lixf=(0.333[hgbox_ll,hgbox_lr]) transformed ixf;

```

```

212 else:
213     hgbox_lr transformed lixf=
214         ((hangul.jamo[lid]w/
215         (hangul.jamo[lid]w+hangul.jamo[cid]w+hangul.jamo[rid]w))
216         [hgbox_ll,hgbox_lr]) transformed ixf;
217 fi;
218
219 % centre inner transform
220 hgbox_ul transformed cixf=hgbox_ur transformed lixf;
221 hgbox_ll transformed cixf=hgbox_lr transformed lixf;
222 if hangul.jamo[lid]w+hangul.jamo[cid]w+hangul.jamo[rid]w=0:
223     hgbox_lr transformed cixf=(0.667[hgbox_ll,hgbox_lr]) transformed ixf;
224 else:
225     hgbox_lr transformed cixf=
226         (((hangul.jamo[lid]w+hangul.jamo[cid]w)/
227         (hangul.jamo[lid]w+hangul.jamo[cid]w+hangul.jamo[rid]w))
228         [hgbox_ll,hgbox_lr]) transformed ixf;
229 fi;
230
231 % right inner transform
232 hgbox_ur transformed rixf=hgbox_ur transformed ixf;
233 hgbox_lr transformed rixf=hgbox_lr transformed ixf;
234 hgbox_ll transformed rixf=hgbox_lr transformed cixf;
235
236 % left outer transform
237 (hgbox_ul transformed loxf)-(hgbox_ll transformed loxf)=
238     whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
239 (hgbox_lr transformed loxf)-(hgbox_ll transformed loxf)=
240     whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
241 (hgbox_lb transformed loxf)=
242     (whatever[hgbox_ll,hgbox_ul]) transformed oxf;
243 (hgbox_rb transformed loxf)=
244     (hangul.jamo[cid]lb,400) transformed cixf
245     +whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
246 (hgbox_ub transformed loxf)=
247     (whatever[hgbox_ul,hgbox_ur]) transformed oxf;
248 (hgbox_db transformed loxf)=
249     (whatever[hgbox_ll,hgbox_lr]) transformed oxf;
250
251 % centre outer transform
252 (hgbox_ul transformed coxf)-(hgbox_ll transformed coxf)=
253     whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
254 (hgbox_lr transformed coxf)-(hgbox_ll transformed coxf)=
255     whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
256 (hgbox_lb transformed coxf)=
257     (hangul.jamo[lid]rb,400) transformed lixf
258     +whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
259 (hgbox_rb transformed coxf)=

```

```

260     (hangul.jamo[rid]lb,400) transformed rixf
261     +whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
262     (hgbox_ub transformed coxf)=
263     (whatever[hgbox_ul,hgbox_ur]) transformed oxf;
264     (hgbox_db transformed coxf)=
265     (whatever[hgbox_ll,hgbox_lr]) transformed oxf;
266
267     % right outer transform
268     (hgbox_ul transformed roxf)-(hgbox_ll transformed roxf)=
269     whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
270     (hgbox_lr transformed roxf)-(hgbox_ll transformed roxf)=
271     whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
272     (hgbox_lb transformed roxf)=
273     (hangul.jamo[cid]rb,400) transformed cixf
274     +whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
275     (hgbox_rb transformed roxf)=
276     (whatever[hgbox_lr,hgbox_ur]) transformed oxf;
277     (hgbox_ub transformed roxf)=
278     (whatever[hgbox_ul,hgbox_ur]) transformed oxf;
279     (hgbox_db transformed roxf)=
280     (whatever[hgbox_ll,hgbox_lr]) transformed oxf;
281
282     % draw the contents
283     hangul.scantokens hangul.jamo[lid]code (vow,lixf,loxf);
284     hangul.scantokens hangul.jamo[cid]code (vow,cixf,coxf);
285     hangul.scantokens hangul.jamo[rid]code (vow,rixf,roxf);
286 endgroup;
287 enddef;
288
289 vardef hangul.combine.syllable(expr lid,vid,tid)(expr vow,ixf,oxf) =
290 % put in default values if necessary
291 hangul.fill_in_jamo(lid);
292 hangul.fill_in_jamo(vid);
293 hangul.fill_in_jamo(tid);
294
295 % set up transform variables
296 begingroup
297 save lixf,loxf,vixf,voxft,ixf,toxf;
298 transform lixf,loxf,vixf,voxft,ixf,toxf;
299
300 % lead inner transform
301 hgbox_ul transformed lixf=hgbox_ul transformed ixf;
302 if hangul.jamo[lid]w+hangul.jamo[vid]w=0:
303     hgbox_ur transformed lixf=(0.5[hgbox_ul,hgbox_ur]) transformed ixf;
304 else:
305     hgbox_ur transformed lixf=
306     ((hangul.jamo[lid]w/(hangul.jamo[lid]w+hangul.jamo[vid]w))
307     [hgbox_ul,hgbox_ur]) transformed ixf;

```

```

308 fi;
309 if hangul.jamo[lid]h+hangul.jamo[vid]h+hangul.jamo[tid]h=0:
310     hgbox_ll transformed lixf=(0.333[hgbox_ul,hgbox_ll]) transformed ixf;
311 else:
312     hgbox_ll transformed lixf=
313         ((hangul.jamo[lid]h/
314             (hangul.jamo[lid]h+hangul.jamo[vid]h+hangul.jamo[tid]h))
315             [hgbox_ul,hgbox_ll]) transformed ixf;
316 fi;
317
318 % vowel inner transform
319 hgbox_ul transformed vixf=hgbox_lr transformed lixf;
320 if hangul.jamo[lid]h+hangul.jamo[vid]h+hangul.jamo[tid]h=0:
321     hgbox_ur transformed vixf=(0.333[hgbox_ur,hgbox_lr]) transformed ixf;
322     hgbox_lr transformed vixf=(0.333[hgbox_lr,hgbox_ur]) transformed ixf;
323 else:
324     hgbox_ur transformed vixf=
325         ((hangul.jamo[lid]h/
326             (hangul.jamo[lid]h+hangul.jamo[vid]h+hangul.jamo[tid]h))
327             [hgbox_ur,hgbox_lr]) transformed ixf;
328     hgbox_lr transformed vixf=
329         ((hangul.jamo[tid]h/
330             (hangul.jamo[lid]h+hangul.jamo[vid]h+hangul.jamo[tid]h))
331             [hgbox_lr,hgbox_ur]) transformed ixf;
332 fi;
333
334 % tail inner transform
335 hgbox_ll transformed tixf=hgbox_ll transformed ixf;
336 hgbox_lr transformed tixf=hgbox_lr transformed ixf;
337 hgbox_ur transformed tixf=hgbox_lr transformed vixf;
338
339 % lead outer transform
340 (hgbox_ul transformed loxf)-(hgbox_ll transformed loxf)=
341     whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
342 (hgbox_lr transformed loxf)-(hgbox_ll transformed loxf)=
343     whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
344 (hgbox_lb transformed loxf)=
345     (whatever[hgbox_ll,hgbox_ul]) transformed oxf;
346 (hgbox_rb transformed loxf)=
347     (hangul.jamo[vid]lb400) transformed vixf
348     +whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
349 (hgbox_ub transformed loxf)=
350     (whatever[hgbox_ul,hgbox_ur]) transformed oxf;
351 (hgbox_db transformed loxf)=
352     (500,hangul.jamo[vid]ub) transformed vixf
353     +whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
354
355 % vowel outer transform

```

```

356 (hgbox_ul transformed vox f)-(hgbox_ll transformed vox f)=
357   whatever*((hgbox_ul transformed ox f)-(hgbox_ll transformed ox f));
358 (hgbox_lr transformed vox f)-(hgbox_ll transformed vox f)=
359   whatever*((hgbox_lr transformed ox f)-(hgbox_ll transformed ox f));
360 (hgbox_lb transformed vox f)=
361   (whatever[hgbox_ll,hgbox_ul]) transformed ox f;
362 (hgbox_rb transformed vox f)=
363   (whatever[hgbox_lr,hgbox_ur]) transformed ox f;
364 (hgbox_ub transformed vox f)=
365   (whatever[hgbox_ul,hgbox_ur]) transformed ox f;
366 (hgbox_db transformed vox f)=
367   (500,hangul.jamo[tid]ub) transformed tix f
368   +whatever*((hgbox_lr transformed ox f)-(hgbox_ll transformed ox f));
369
370 % tail outer transform
371 (hgbox_ul transformed tox f)-(hgbox_ll transformed tox f)=
372   whatever*((hgbox_ul transformed ox f)-(hgbox_ll transformed ox f));
373 (hgbox_lr transformed tox f)-(hgbox_ll transformed tox f)=
374   whatever*((hgbox_lr transformed ox f)-(hgbox_ll transformed ox f));
375 (hgbox_lb transformed tox f)=
376   (whatever[hgbox_ll,hgbox_ul]) transformed ox f;
377 (hgbox_rb transformed tox f)=
378   (whatever[hgbox_lr,hgbox_ur]) transformed ox f;
379 (hgbox_ub transformed tox f)=
380   (500,hangul.jamo[vid]db) transformed vix f
381   +whatever*((hgbox_lr transformed ox f)-(hgbox_ll transformed ox f));
382 (hgbox_db transformed tox f)=
383   (whatever[hgbox_ll,hgbox_lr]) transformed ox f;
384
385 % draw the contents
386 build_kanji.level
387   (hangul.scantokens hangul.jamo[vid]code (vid,vix f,vox f));
388   hangul.scantokens hangul.jamo[lid]code (vid,lix f,loxf);
389   hangul.scantokens hangul.jamo[tid]code
390     (vid,hxf((100+20*mincho,850+30*mincho),(900-20*mincho,50))
391     transformed tix f,tox f);
392 endgroup;
393 endif;
394
395 vardef hangul.combine.tb(expr tid,bid)(expr vow,ixf,oxf) =
396   % put in default values if necessary
397   hangul.fill_in__jamo(tid);
398   hangul.fill_in__jamo(bid);
399
400 % set up transform variables
401 begingroup
402   save tix f,tox f,bix f,box f;
403   transform tix f,tox f,bix f,box f;

```

```

404
405 % top inner transform
406 hgbox_ul transformed tixf=hgbox_ul transformed ixf;
407 hgbox_ur transformed tixf=hgbox_ur transformed ixf;
408 if hangul.jamo[tid]h+hangul.jamo[bid]h=0:
409     hgbox_lr transformed tixf=(0.5[hgbox_ur,hgbox_lr]) transformed ixf;
410 else:
411     hgbox_lr transformed tixf=
412         ((hangul.jamo[tid]h/(hangul.jamo[tid]h+hangul.jamo[bid]h))
413         [hgbox_ur,hgbox_lr]) transformed ixf;
414 fi;
415
416 % bottom inner transform
417 hgbox_lr transformed bixf=hgbox_lr transformed ixf;
418 hgbox_ll transformed bixf=hgbox_ll transformed ixf;
419 hgbox_ur transformed bixf=hgbox_lr transformed tixf;
420
421 % left outer transform
422 (hgbox_ul transformed toxf)-(hgbox_ll transformed toxf)=
423     whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
424 (hgbox_lr transformed toxf)-(hgbox_ll transformed toxf)=
425     whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
426 (hgbox_lb transformed toxf)=
427     (whatever[hgbox_ll,hgbox_ul]) transformed oxf;
428 (hgbox_rb transformed toxf)=
429     (whatever[hgbox_lr,hgbox_ur]) transformed oxf;
430 (hgbox_ub transformed toxf)=
431     (whatever[hgbox_ul,hgbox_ur]) transformed oxf;
432 (hgbox_db transformed toxf)=
433     (500,hangul.jamo[bid]ub) transformed bixf
434     +whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
435
436 % right outer transform
437 (hgbox_ul transformed boxf)-(hgbox_ll transformed boxf)=
438     whatever*((hgbox_ul transformed oxf)-(hgbox_ll transformed oxf));
439 (hgbox_lr transformed boxf)-(hgbox_ll transformed boxf)=
440     whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
441 (hgbox_lb transformed boxf)=
442     (whatever[hgbox_ll,hgbox_ul]) transformed oxf;
443 (hgbox_rb transformed boxf)=
444     (whatever[hgbox_lr,hgbox_ur]) transformed oxf;
445 (hgbox_ub transformed boxf)=
446     (500,hangul.jamo[tid]db) transformed tixf
447     +whatever*((hgbox_lr transformed oxf)-(hgbox_ll transformed oxf));
448 (hgbox_db transformed boxf)=
449     (whatever[hgbox_ll,hgbox_lr]) transformed oxf;
450
451 % draw the contents

```

```
452     hangul.scantokens hangul.jamo[tid]code (vow,tixf,toxf);  
453     hangul.scantokens hangul.jamo[bid]code (vow,bixf,boxf);  
454 endgroup;  
455 enddef;
```


jamo-basic.mp

```
1 %
2 % Hangul basic jamo for Mandeubsida
3 % Copyright (C) 2011, 2012, 2013 Matthew Skala
4 %
5-29 [Standard copyright notice]
30
31 inclusion_lock(jamobasic);
32
33 _____
34
```

JAMO

Filler Jamo

```
35 % FILLER JAMO
36
37 % filler for jamo not yet defined
38 vardef hangul.jamo.bigx(expr vow,ixf,oxf) =
39   tsu_xform(ixf)(
40     push_pbox_toexpand("jamo.bigx");
41     push_stroke((100,800)-(900,0),(1.5,1.5)-(1.5,1.5));
42     push_stroke((900,800)-(100,0),(1.5,1.5)-(1.5,1.5));
43     expand_pbox);
44 enddef;
45
46 % 230 head empty
47 hangul.jamo[230]code="jamo.empty";
48 hangul.jamo[230]w=0;
49 hangul.jamo[230]h=0;
50
51 % 500 tail empty
52 hangul.jamo[500]code="jamo.empty";
53 hangul.jamo[500]w=0;
54 hangul.jamo[500]h=0;
55
56 vardef hangul.jamo.empty(expr vow,ixf,oxf) =
57   % do nothing
58 enddef;
59
60 _____
61
```

Sios/Cieuc/Chieuch Family

```
62 % SIOS/CIEUC/CHIEUCH FAMILY
63
64 % this defines eighteen jamo that are closely related
65 % "bars" = 0, 1, or 2, number of horizontal strokes to add to sios
```

```

66 % 0 = sios, 1 = cieuc, 2 = chieuch
67 % "shove" = -1, 0, or 1, direction to shift top junction
68 % -1 = ceongchieum (left), 0 = (centre), 1 = chiteum (right)
69 % "isalt" = boolean, use "alternate" form
70
71 vardef hangul.jamo.sjc(expr bars,shove,isalt)(expr vow,ixf,oxf) =
72   tsu_xform(hxf_inout(if bars=2: 7 else: 5 fi,ixf,oxf))(
73     begingroup
74       push_pbox_toexpand("jamo.sjc");
75       save x,y;
76       numeric x[],y[];
77
78       if bars=2:
79         push_stroke((320,790)..(510,790)..(680,790+10*mincho),
80           (1.5,1.5)-(1.5,1.5)-(1.5,1.5));
81         set_boserif(0,0,5);
82         set_boserif(0,2,6);
83
84         z7=(180,600);
85         z8=(530,y7);
86         z9=(820,y7+20*mincho);
87       else:
88         z7=(270,740);
89         z8=(530,y7);
90         z9=(730,y7+20*mincho);
91       fi;
92
93       if bars>0:
94         push_stroke(z7..z8..z9,(1.6,1.6)-(1.6,1.6)-(1.6,1.6));
95         set_boserif(0,0,5);
96         if (not isalt) and not (shove=-1):
97           set_boserif(0,2,6);
98         fi;
99       fi;
100
101       if shove=0:
102         z1=(530,if bars>0: y7-30+10*bars else: 720 fi);
103         if isalt:
104           z3=mincho[(170,140),(120,140)];
105           z2=(390-20*mincho,((390-y3)/(720-y3))*(y1-y3)+y3);
106         else:
107           z3=mincho[(200,50),(120,20)];
108           z2=(400-20*mincho,((340-y3)/(720-y3))*(y1-y3)+y3);
109         fi;
110       elseif shove=1:
111         z1=(780,if bars>0: y7-30+30*bars else: 720 fi);
112         if isalt:
113           z3=mincho[(130,140),(80,140)];

```

```

114         z2=(540-20*mincho,((390-y3)/(720-y3))*(y1-y3)+y3);
115     else:
116         z3=mincho[(160,50),(80,20)];
117         z2=(550-20*mincho,((340-y3)/(720-y3))*(y1-y3)+y3);
118     fi;
119 elseif shove=-1:
120     z1=(320,if bars>0: y7-30+10*bars else: 720 fi);
121     if isalt:
122         z3=mincho[(140,210),(90,210)];
123         z2=(260-20*mincho,((430-y3)/(720-y3))*(y1-y3)+y3);
124     else:
125         z3=mincho[(200,50),(120,20)];
126         z2=(280-20*mincho,((340-y3)/(720-y3))*(y1-y3)+y3);
127     fi;
128 fi;
129
130 push_stroke(z1..tension 1.2..z2..z3,(1.6,1.6)-(1.5,1.5)-(1,1));
131 if bars=0:
132     set_boserif(0,0,8);
133 fi;
134
135 z4=point 0.25 of get_strokep(0);
136 if shove=0:
137     if isalt:
138         z6=mincho[(740,180),(710,220)];
139     else:
140         z6=(810,70);
141     fi;
142     z5=(620+20*mincho,((360-y6)/(720-y6))*(y1-y6)+y6);
143 elseif shove=1:
144     if isalt:
145         z6=mincho[(940,180),(910,220)];
146         z5=(770+20*mincho,((390-y6)/(720-y6))*(y1-y6)+y6);
147     else:
148         z6=(810,70);
149         z5=(750+20*mincho,((360-y6)/(720-y6))*(y1-y6)+y6);
150     fi;
151 elseif shove=-1:
152     if isalt:
153         z6=mincho[(870,80),(840,130)];
154         z5=(520+20*mincho,((360-y6)/(720-y6))*(y1-y6)+y6);
155     else:
156         z6=(850,70);
157         z5=(520+20*mincho,((330-y6)/(720-y6))*(y1-y6)+y6);
158     fi;
159 fi;
160
161 push_stroke(z4..tension 1.2..z5..z6,

```

```

162         (1,1)-(1.3,1.3)-(1.7,1.7));
163
164     if bars=2:
165         set_bosize(-2,89);
166         set_bosize(-1,89);
167         set_bosize(0,89);
168     fi;
169     expand_pbox;
170 endgroup);
171 enddef;
172
173
174

```

Kiyeok

```

175 % KIYEOK
176
177 % 100 lead G
178 hangul.jamo[100]code="jamo.maybealt_kiyeok";
179 hangul.jamo[100]h=5;
180 hangul.jamo[100]w=3;
181 hangul.jamo[100]lb=450;
182 hangul.jamo[100]rb=800;
183 hangul.jamo[100]ub=820;
184 hangul.jamo[100]db=300;
185
186 % 101 lead GG
187 hangul.jamo[101]code="combine.lr(100,100)";
188 hangul.jamo[101]w=5;
189
190 % 501 tail G
191 hangul.jamo[501]code="jamo.kiyeok";
192 hangul.jamo[501]lb=450;
193 hangul.jamo[501]rb=800;
194 hangul.jamo[501]ub=820;
195 hangul.jamo[501]db=400;
196
197 % 502 tail GG
198 hangul.jamo[502]code="combine.lr(501,501)";
199 hangul.jamo[502]w=5;
200
201 vardef hangul.jamo.kiyeok(expr vow,ixf,oxf) =
202     tsu_xform(ixf)(
203         push_pbox_toexpand("jamo.kiyeok");
204         push_stroke((190+70*mincho,680)-(800,680+20*mincho)..tension 1.2..
205             (800-20*mincho,420)..(800-100*mincho,70),
206             (1.5,1.5)-(1.6,1.6)-(1.5,1.5)-(1.1,1.1));

```

```

207     set_boserif(0,0,5);
208     set_boserif(0,1,4);
209     set_botip(0,1,1);
210     expand_pbox);
211 endif;
212
213 % 200 lead alt-G
214 hangul.jamo[200]code="jamo.alt_kiyeok";
215 hangul.jamo[200]h=5;
216 hangul.jamo[200]w=3;
217 hangul.jamo[200]lb=450;
218 hangul.jamo[200]rb=800;
219 hangul.jamo[200]ub=710;
220 hangul.jamo[200]db=300;
221
222 vardef hangul.jamo.alt_kiyeok(expr vow,ixf,oxf) =
223     tsu_xform(ixf)(
224         push_pbox_toexpand("jamo.alt_kiyeok");
225         push_stroke((190+80*mincho,680)-(840-20*mincho,680+20*mincho)..
226             tension 1.2..(560,360)..(40,50),
227             (1.5,1.5)-(1.6,1.6)-(1.4,1.4)-(1,1));
228         set_boserif(0,0,5);
229         set_boserif(0,1,4);
230         set_botip(0,1,0);
231         expand_pbox);
232 endif;
233
234 vardef hangul.jamo.maybealt_kiyeok(expr vow,ixf,oxf) =
235     if unknown vow:
236         hangul.jamo.kiyeok(vow,ixf,oxf);
237     elseif hangul.jamo[vow]invokes__alternate:
238         hangul.jamo.alt_kiyeok(vow,ixf,oxf);
239     else:
240         hangul.jamo.kiyeok(vow,ixf,oxf);
241     fi;
242 endif;
243
244
245

```

Nieun

```

246 % NIEUN
247
248 % 102 lead N
249 hangul.jamo[102]code="jamo.maybealt_nieun";
250 hangul.jamo[102]w=2.5;
251 hangul.jamo[102]lb=190;

```

```

252 hangul.jamo[102]rb=700;
253 hangul.jamo[102]ub=400;
254 hangul.jamo[102]db=140;
255
256 % 202 lead alt-N
257 hangul.jamo[202]code="jamo.alt_nieun";
258 hangul.jamo[202]w=2.5;
259 hangul.jamo[202]lb=190;
260 hangul.jamo[202]rb=700;
261 hangul.jamo[202]ub=400;
262 hangul.jamo[202]db=140;
263
264 % 504 tail N
265 hangul.jamo[504]code="jamo.nieun";
266 hangul.jamo[504]lb=190;
267 hangul.jamo[504]rb=700;
268 hangul.jamo[504]ub=400;
269 hangul.jamo[504]db=140;
270
271 % 604 tail alt-N
272 hangul.jamo[604]code="jamo.alt_nieun";
273 hangul.jamo[604]lb=190;
274 hangul.jamo[604]rb=700;
275 hangul.jamo[604]ub=400;
276 hangul.jamo[604]db=140;
277
278 vardef hangul.jamo.nieun__inside =
279   push__stroke(interpath(mincho,
280     (190,680)–(190,240)–(190,140)–(310,140)–(770,140),
281     (190,680)–(190,240){down}..(220,160)..{right}(310,140)–(770,140)),
282     (1.6,1.6)–(1.5,1.5)–(1.5,1.5)–(1.6,1.6)–(1.5,1.5));
283   set__boserif(0,0,8);
284   set__boserif(0,4,6);
285   set__botip(0,2,1);
286 enddef;
287
288 vardef hangul.jamo.nieun(expr vow,ixf,oxf) =
289   tsu__xform(ixf)(
290     push__pbox__toexpand("jamo.nieun");
291     hangul.jamo.nieun__inside;
292     expand__pbox);
293 enddef;
294
295 vardef hangul.jamo.alt_nieun__inside =
296   push__stroke(interpath(mincho,
297     (190,680)–(190,340)–(190,140)–(310,140)–(800,140),
298     (190,680)–(190,340){down}..(220,160)..{right}(310,140)..
299     (520,160)..(810,260)),

```

```

300     (1.6,1.6)-(1.5,1.5)-(1.5,1.5)-(1.6,1.6)-(1.4,1.4)-(1.1,1.1));
301     set_boserif(0,0,8);
302     set_botip(0,2,1);
303 endif;
304
305 vardef hangul.jamo.alt_nieun(expr vow,ixf,oxf) =
306     tsu_xform(hxf_inout(1,ixf,oxf))(
307         push_pbox_toexpand("jamo.alt_nieun");
308         hangul.jamo.alt_nieun_inside;
309         expand_pbox);
310 endif;
311
312 vardef hangul.jamo.maybealt_nieun(expr vow,ixf,oxf) =
313     if unknown vow:
314         hangul.jamo.nieun(vow,ixf,oxf);
315     elseif hangul.jamo[vow]invokes__alternate:
316         hangul.jamo.alt_nieun(vow,ixf,oxf);
317     else:
318         hangul.jamo.nieun(vow,ixf,oxf);
319     fi;
320 endif;
321
322 _____
323

```

Tikeut

```

324 % TIKEUT
325
326 % 103 lead D
327 hangul.jamo[103]code="jamo.maybealt_tikeut";
328 hangul.jamo[103]lb=190;
329 hangul.jamo[103]rb=500;
330 hangul.jamo[103]ub=850;
331 hangul.jamo[103]db=140;
332
333 % 104 lead DD
334 hangul.jamo[104]code="combine.lr(203,103)";
335
336 % 203 lead alt-D
337 hangul.jamo[203]code="jamo.alt_tikeut";
338 hangul.jamo[203]lb=190;
339 hangul.jamo[203]rb=500;
340 hangul.jamo[203]ub=850;
341 hangul.jamo[203]db=140;
342
343 % 507 tail D
344 hangul.jamo[507]code="jamo.tikeut";

```

```

345 hangul.jamo[507]lb=190;
346 hangul.jamo[507]rb=500;
347 hangul.jamo[507]ub=850;
348 hangul.jamo[507]db=140;
349
350 % 607 tail alt-D
351 hangul.jamo[607]code="jamo.alt_tikeut";
352 hangul.jamo[607]lb=190;
353 hangul.jamo[607]rb=500;
354 hangul.jamo[607]ub=850;
355 hangul.jamo[607]db=140;
356
357 vardef hangul.jamo.tikeut__inside(expr ixf) =
358   push_stroke((120+40*mincho,700+(15/yy part ixf)*mincho)..
359     (500,700)..(760,700+10*mincho),
360     (1.5,1.5)-(14,14)-(14,14));
361   set__boserif(0,2,6);
362 enddef;
363
364 vardef hangul.jamo.tikeut(expr vow,ixf,oxf) =
365   tsu_xform(ixf)(
366     push_pbox__toexpand("jamo.tikeut");
367     hangul.jamo.tikeut__inside(ixf);
368     hangul.jamo.nieun__inside;
369     expand_pbox);
370 enddef;
371
372 vardef hangul.jamo.alt_tikeut__inside(expr ixf) =
373   push_stroke((120+40*mincho,700+(15/yy part ixf)*mincho)..
374     (520,700)..(810,700+10*mincho),
375     (1.5,1.5)-(14,14)-(14,14));
376 enddef;
377
378 vardef hangul.jamo.alt_tikeut(expr vow,ixf,oxf) =
379   tsu_xform(hxf_inout(1,ixf,oxf))(
380     push_pbox__toexpand("jamo.alt_tikeut");
381     hangul.jamo.alt_tikeut__inside(ixf);
382     hangul.jamo.alt_nieun__inside;
383     expand_pbox);
384 enddef;
385
386 vardef hangul.jamo.maybealt_tikeut(expr vow,ixf,oxf) =
387   if unknown vow:
388     hangul.jamo.tikeut(vow,ixf,oxf);
389   elseif hangul.jamo[vow]invokes__alternate:
390     hangul.jamo.alt_tikeut(vow,ixf,oxf);
391   else:
392     hangul.jamo.tikeut(vow,ixf,oxf);

```



```

393 fi;
394 enddef;
395
396
397

```

Rieul

JAMO

```

398 % RIEUL
399
400 % 105 lead R
401 hangul.jamo[105]code="jamo.maybealt_rieul";
402 hangul.jamo[105]lb=160;
403 hangul.jamo[105]rb=780;
404 hangul.jamo[105]ub=830;
405 hangul.jamo[105]db=50;
406
407 % 508 tail L
408 hangul.jamo[508]code="jamo.rieul";
409 hangul.jamo[508]lb=160;
410 hangul.jamo[508]rb=780;
411 hangul.jamo[508]ub=830;
412 hangul.jamo[508]db=50;
413
414 % 608 tail alt-L
415 hangul.jamo[608]code="jamo.alt_rieul";
416 hangul.jamo[608]lb=160;
417 hangul.jamo[608]rb=780;
418 hangul.jamo[608]ub=830;
419 hangul.jamo[608]db=50;
420
421 vardef hangul.jamo.rieul(expr vow,ixf,oxf) =
422   hangul.jamo.kiyeok(whatever,hxf((50,780),(850,340)) transformed ixf,oxf);
423   hangul.jamo.tikeut(vow,hxf((80,500),(930,0)) transformed ixf,oxf);
424   replace_stroke(-1)(subpath (0,0.14-0.22*mincho+
425     xpart (oldp intersectiontimes
426       ((xpart point infinity of get_stroke(-2),-50)-
427         (xpart point infinity of get_stroke(-2),850)))) of oldp);
428 enddef;
429
430 % 205 lead alt-R
431 hangul.jamo[205]code="jamo.alt_rieul";
432 hangul.jamo[205]lb=160;
433 hangul.jamo[205]rb=780;
434 hangul.jamo[205]ub=830;
435 hangul.jamo[205]db=50;
436
437 vardef hangul.jamo.alt_rieul(expr vow,ixf,oxf) =

```

```

438 hangul.jamo.kiyeok(whatever,hxf((50,780),(850,340)) transformed ixf,oxf);
439 hangul.jamo.alt_tikeut(vow,hxf((80,500),(930,0)) transformed ixf,oxf);
440 replace_stroke(-1)(subpath (0,0,14-0.22*mincho+
441     xpart (oldp intersectiontimes
442     ((xpart point infinity of get_stroke(-2),50)-
443     (xpart point infinity of get_stroke(-2),850)))) of oldp);
444 enddef;
445
446 vardef hangul.jamo.maybealt_rieul(expr vow,ixf,oxf) =
447   if unknown vow:
448     hangul.jamo.rieul(vow,ixf,oxf);
449   elseif hangul.jamo[vow]invokes__alternate:
450     hangul.jamo.alt_rieul(vow,ixf,oxf);
451   else:
452     hangul.jamo.rieul(vow,ixf,oxf);
453   fi;
454 enddef;
455
456
457

```

Mieum

```

458 % MIEUM
459
460 % 106 lead M
461 hangul.jamo[106]code="jamo.mieum";
462 hangul.jamo[106]lb=170;
463 hangul.jamo[106]rb=790;
464 hangul.jamo[106]ub=760;
465 hangul.jamo[106]db=150;
466
467 % 516 tail M
468 hangul.jamo[516]code="jamo.mieum";
469 hangul.jamo[516]lb=170;
470 hangul.jamo[516]rb=790;
471 hangul.jamo[516]ub=760;
472 hangul.jamo[516]db=150;
473
474 vardef hangul.jamo.mieum(expr vow,ixf,oxf) =
475   tsu_xform(ixf)(
476     push_pbox__toexpand("jamo.mieum");
477     push_stroke((120+40*mincho,700+(15/yypart ixf)*mincho)..
478       (500,700)..{curl 1}(780,700+10*mincho){curl 1}..tension 1.2..
479       (780-10*mincho,420)..(780-30*mincho,150),
480       (1.5,1.5)-(1.4,1.4)-(1.5,1.5)-(1.4,1.4)-(1.1,1.1));
481     set_boserif(0,2,4);
482     set_botip(0,2,1);

```

```

483   push_stroke((190,680)-(190,110),(1.6,1.6)-(1.5,1.5));
484   set_boserif(0,0,8);
485   push_stroke((190,170)..(0.5[(190,170),(820,160)]+(0,-15)*mincho)..
486       (820,160),
487       (1.5,1.5)-(1.5,1.5));
488   expand_pbox);
489 enddef;
490
491
492

```

Pieup

```

493 % PIEUP
494
495 % 107 lead B
496 hangul.jamo[107]code="jamo.pieup";
497 hangul.jamo[107]lb=200;
498 hangul.jamo[107]rb=800;
499 hangul.jamo[107]h=5;
500
501 % 108 lead BB
502 hangul.jamo[108]code="combine.lr(207,107)";
503 hangul.jamo[108]h=5;
504 hangul.jamo[108]w=5;
505
506 % 517 tail B
507 hangul.jamo[517]code="jamo.pieup";
508 hangul.jamo[517]lb=200;
509 hangul.jamo[517]rb=800;
510 hangul.jamo[517]h=5;
511
512 vardef hangul.jamo.pieup(expr vow,ixf,oxf) =
513   tsu_xform(ixf)(
514     push_pbox_toexpand("jamo.pieup");
515     push_stroke((260,700-40*mincho)-(260,110),(1.6,1.6)-(1.5,1.5));
516     set_boserif(0,0,8);
517     push_stroke((260,450-10*mincho)-(740,450),(1.5,1.5)-(1.5,1.5));
518     push_stroke((740,700)-(740,120),(1.6,1.6)-(1.5,1.5));
519     set_boserif(0,0,8);
520     push_stroke((260,170-10*mincho)-(740,170),(1.5,1.5)-(1.5,1.5));
521     expand_pbox);
522 enddef;
523
524 % 207 lead alt-B
525 hangul.jamo[207]code="jamo.alt_pieup";
526
527 vardef hangul.jamo.alt_pieup(expr vow,ixf,oxf) =

```

```

528     hangul.jamo.pieup(vow,
529         hxf((50,850-100*mincho),(950,50+30*mincho)) transformed ixf,oxf);
530 enddef;
531
532
533

```

Sios

```

534 % SIOS
535
536 % 109 lead S
537 hangul.jamo[109]code="jamo.sjc(0,0,false)";
538 hangul.jamo[109]lb=250;
539 hangul.jamo[109]rb=700;
540
541 % 110 lead SS
542 hangul.jamo[110]code="combine.lr(209,109)";
543
544 % 519 tail S
545 hangul.jamo[519]code="jamo.sjc(0,0,false)";
546 hangul.jamo[519]lb=250;
547 hangul.jamo[519]rb=700;
548
549 % 520 tail SS
550 hangul.jamo[520]code="combine.lr(619,519)";
551
552 % 209 lead alt-S
553 hangul.jamo[209]code="jamo.sjc(0,0,true)";
554 hangul.jamo[209]lb=250;
555 hangul.jamo[209]rb=700;
556
557 % 619 tail alt-S
558 hangul.jamo[619]code="jamo.sjc(0,0,true)";
559 hangul.jamo[619]lb=250;
560 hangul.jamo[619]rb=700;
561
562
563

```

Ieung

```

564 % IEUNG
565
566 % 111 lead empty (=NG)
567 hangul.jamo[111]code="jamo.ieung";
568 hangul.jamo[111]h=5;
569

```

```

570 % 521 tail NG
571 hangul.jamo[521]code="jamo.ieung";
572 hangul.jamo[521]h=3;
573
574 vardef hangul.jamo.ieung(expr vow,ixf,oxf) =
575   tsu__xform(ixf)(
576     push__pbox_toexpand("jamo.ieung");
577     if unknown vow:
578       push_stroke((530,750)..(200,375)..(500,0)..(800,375)..cycle,
579         (1,6,1,6)-(1,5,1,5)-(14,14)-(1,5,1,5)-cycle);
580     elseif (vow>=313) and (vow<=319):
581       push_stroke((530,750)..(200,425)..(500,100)..(800,425)..cycle,
582         (1,6,1,6)-(1,5,1,5)-(14,14)-(1,5,1,5)-cycle);
583     else:
584       push_stroke((530,750)..(200,375)..(500,0)..(800,375)..cycle,
585         (1,6,1,6)-(1,5,1,5)-(14,14)-(1,5,1,5)-cycle);
586     fi;
587     set__boserif(0,0,6);
588     expand__pbox);
589 replace_strokep(0)(insert_nodes(oldp)(0.5,1.5,2.5,3.5));
590 replace_strokeq(0)(insert_nodes(oldq)(0.5,1.5,2.5,3.5));
591 begingroup
592   save i,j,t;
593   numeric i,j,t;
594   i:=-1;
595   forever:
596     j:=find_whatever(otstroke,i);
597     exitif j=0;
598     j:=xpart (get__strokep(i) intersectiontimes get__strokep(0));
599     if (j>0) and (j<1):
600       replace_strokep(i)(subpath (j,infinity) of oldp);
601     fi;
602     if known tsu__do_serif[8]:
603       if 0<ypart (get__strokep(0) intersectiontimes
604         (((-80,80)+point 0 of get__strokep(i))-get__strokep(i))):
605         set__boserif(i,0,whatever);
606       fi;
607     fi;
608     i:=i-1;
609   endfor;
610 endgroup;
611 enddef;
612
613
614

```

Cieuc

```
615 % CIEUC
616
617 % 112 lead J
618 hangul.jamo[112]code="jamo.sjc(1,0,false)";
619 hangul.jamo[112]lb=250;
620 hangul.jamo[112]rb=700;
621
622 % 113 lead JJ
623 hangul.jamo[113]code="combine.lr(212,112)";
624
625 % 522 tail J
626 hangul.jamo[522]code="jamo.sjc(1,0,false)";
627 hangul.jamo[522]lb=250;
628 hangul.jamo[522]rb=700;
629
630 % 212 lead alt-J
631 hangul.jamo[212]code="jamo.sjc(1,0,true)";
632 hangul.jamo[212]lb=250;
633 hangul.jamo[212]rb=700;
634
635 % 622 tail alt-J
636 hangul.jamo[622]code="jamo.sjc(1,0,true)";
637 hangul.jamo[622]lb=250;
638 hangul.jamo[622]rb=700;
639
640
641
```

Chieuch

```
642 % CHIEUCH
643
644 % 114 lead C
645 hangul.jamo[114]code="jamo.sjc(2,0,false)";
646 hangul.jamo[114]lb=250;
647 hangul.jamo[114]rb=700;
648
649 % 214 lead alt-C
650 hangul.jamo[214]code="jamo.sjc(2,0,true)";
651 hangul.jamo[214]lb=250;
652 hangul.jamo[214]rb=700;
653
654 % 523 tail C
655 hangul.jamo[523]code="jamo.sjc(2,0,false)";
656 hangul.jamo[523]lb=250;
657 hangul.jamo[523]rb=700;
```

658
659
660

Khieukh

JAMO

```
661 % KHIEUKH
662
663 % 115 lead K
664 hangul.jamo[115]code="jamo.maybealt_khieukh";
665 hangul.jamo[115]h=5;
666 hangul.jamo[115]w=3;
667 hangul.jamo[115]lb=450;
668 hangul.jamo[115]rb=800;
669 hangul.jamo[115]ub=820;
670 hangul.jamo[115]db=300;
671
672 % 524 tail K
673 hangul.jamo[524]code="jamo.khieukh";
674 hangul.jamo[524]h=5;
675 hangul.jamo[524]w=3;
676 hangul.jamo[524]lb=450;
677 hangul.jamo[524]rb=800;
678 hangul.jamo[524]ub=820;
679 hangul.jamo[524]db=300;
680
681 vardef hangul.jamo.khieukh(expr vow,ixf,oxf) =
682   tsu_xform(ixf)(
683     push_pbox_toexpand("jamo.khieukh");
684     push_stroke((190+70*mincho,680)-(800,680+20*mincho)..tension 1.2..
685       (800-20*mincho,420)..(800-100*mincho,70),
686       (1.5,1.5)-(1.6,1.6)-(1.5,1.5)-(1.1,1.1));
687     set_boserif(0,0,5);
688     set_boserif(0,1,4);
689     set_botip(0,1,1);
690     push_stroke((210+70*mincho,380)-(point 1.9 of get_strokep(0)),
691       (1.6,1.6)-(1.5,1.5));
692     set_boserif(0,0,5);
693     expand_pbox);
694 enddef;
695
696 % 215 lead alt-K
697 hangul.jamo[215]code="jamo.alt_khieuk";
698 hangul.jamo[215]h=5;
699 hangul.jamo[215]w=3;
700 hangul.jamo[215]lb=450;
701 hangul.jamo[215]rb=800;
702 hangul.jamo[215]ub=710;
```

```

703 hangul.jamo[215]db=300;
704
705 vardef hangul.jamo.alt_khieukh(expr vow,ixf,oxf) =
706   tsu_xform(ixf)(
707     push_pbox_toexpand("jamo.alt_khieukh");
708     push_stroke((190+80*mincho,680)-(840-20*mincho,680+20*mincho)..
709       tension 1.2..(560,360)..(40,50),
710       (1.5,1.5)-(1.6,1.6)-(14,14)-(1,1));
711     set_boserif(0,0,5);
712     set_boserif(0,1,4);
713     set_botip(0,1,0);
714     push_stroke((210+80*mincho,400)-(point 1.6 of get_strokep(0)),
715       (1.5,1.5)-(14,14));
716     set_boserif(0,0,5);
717     expand_pbox);
718 enddef;
719
720 vardef hangul.jamo.maybealt_khieukh(expr vow,ixf,oxf) =
721   if unknown vow:
722     hangul.jamo.khieukh(vow,ixf,oxf);
723   elseif hangul.jamo[vow]invokes__alternate:
724     hangul.jamo.alt_khieukh(vow,ixf,oxf);
725   else:
726     hangul.jamo.khieukh(vow,ixf,oxf);
727   fi;
728 enddef;
729
730
731

```

Thieuth

```

732 % THIEUTH
733
734 % 116 lead T
735 hangul.jamo[116]code="jamo.maybealt_thieuth";
736 hangul.jamo[116]lb=190;
737 hangul.jamo[116]rb=500;
738 hangul.jamo[116]ub=850;
739 hangul.jamo[116]db=140;
740
741 % 525 tail T
742 hangul.jamo[525]code="jamo.thieuth";
743 hangul.jamo[525]lb=190;
744 hangul.jamo[525]rb=500;
745 hangul.jamo[525]ub=850;
746 hangul.jamo[525]db=140;
747

```



```

748 vardef hangul.jamo.thieuth(expr vow,ixf,oxf) =
749   tsu_xform(ixf)(
750     push_pbox_toexpand("jamo.thieuth");
751     hangul.jamo.tikeut_inside(ixf);
752     push_stroke((190,420)..(500,430-20*mincho)..(770,440),
753       (1.6,1.6)-(1.5,1.5)-(1.6,1.6));
754     set_boserif(0,2,6);
755     hangul.jamo.nieun_inside;
756     expand_pbox);
757 enddef;
758
759 % 216 lead alt-T
760 hangul.jamo[216]code="jamo.alt_thieuth";
761 hangul.jamo[216]lb=190;
762 hangul.jamo[216]rb=500;
763 hangul.jamo[216]ub=850;
764 hangul.jamo[216]db=140;
765
766 vardef hangul.jamo.alt_thieuth(expr vow,ixf,oxf) =
767   tsu_xform(hxf_inout(1,ixf,oxf))(
768     push_pbox_toexpand("jamo.alt_thieuth");
769     hangul.jamo.alt_tikeut_inside(ixf);
770     push_stroke((190,420)..(500,430-20*mincho)..(790,450),
771       (1.6,1.6)-(1.5,1.5)-(1.6,1.6));
772     hangul.jamo.alt_nieun_inside;
773     expand_pbox);
774 enddef;
775
776 vardef hangul.jamo.maybealt_thieuth(expr vow,ixf,oxf) =
777   if unknown vow:
778     hangul.jamo.thieuth(vow,ixf,oxf);
779   elseif hangul.jamo[vow]invokes_alterate:
780     hangul.jamo.alt_thieuth(vow,ixf,oxf);
781   else:
782     hangul.jamo.thieuth(vow,ixf,oxf);
783   fi;
784 enddef;
785
786
787

```

Phieuph

```

788 % PHIEUPH
789
790 % 117 lead P
791 hangul.jamo[117]code="jamo.phieuph";
792 hangul.jamo[117]w=5;

```

```

793 hangul.jamo[117]h=5;
794 hangul.jamo[117]lb=320;
795 hangul.jamo[117]rb=690;
796 hangul.jamo[117]ub=800;
797 hangul.jamo[117]db=160;
798
799 % 526 tail P
800 hangul.jamo[526]code="jamo.phieuph";
801 hangul.jamo[526]w=5;
802 hangul.jamo[526]h=5;
803 hangul.jamo[526]lb=320;
804 hangul.jamo[526]rb=690;
805 hangul.jamo[526]ub=800;
806 hangul.jamo[526]db=160;
807
808 vardef hangul.jamo.phieuph(expr vow,ixf,oxf) =
809   tsu_xform(ixf)(
810     push_pbox_toexpand("jamo.phieuph");
811     push_stroke((180,660)-(820,660),
812       (1.6,1.6)-(1.6,1.6));
813     set_boserif(0,0,5);
814     set_boserif(0,1,6);
815     push_stroke((250,530)..tension 1.2..(350,350)..(380,280),
816       (1.1,1.1)-(1.3,1.3)-(1.6,1.6));
817     push_stroke((730,550)..tension 1.2..(660,350)..(600,240),
818       (1.5,1.5)-(1.4,1.4)-(1.2,1.2));
819     push_stroke((120,160)-(880,160),
820       (1.6,1.6)-(1.6,1.6));
821     set_boserif(0,0,5);
822     set_boserif(0,1,6);
823     expand_pbox);
824   begingroup
825     save i,j,t;
826     numeric i,j,t;
827     i:=-4;
828     forever:
829       j:=find_whatever(otstroke,i);
830       exitif j=0;
831       j:=xpart (get_strokep(i) intersectiontimes get_strokep(0));
832       if (j>0) and (j<1):
833         replace_strokep(i)(subpath (j,infinity) of oldp);
834       fi;
835       if known tsu_do_serif[8]:
836         if 0<ypart (get_strokep(0) intersectiontimes
837           (((-50,50)+point 0 of get_strokep(i))-get_strokep(i))):
838           set_boserif(i,0,whatever);
839       fi;
840     fi;

```

```

841     i:=i-1;
842     endfor;
843 endgroup;
844 enddef;
845
846
847

```

Hieuh

```

848 % HIEUH
849
850 % 118 lead H
851 hangul.jamo[118]code="jamo.hieuh";
852 hangul.jamo[118]h=5;
853 hangul.jamo[118]lb=200;
854 hangul.jamo[118]rb=800;
855
856 % 527 tail H
857 hangul.jamo[527]code="jamo.hieuh";
858 hangul.jamo[527]lb=200;
859 hangul.jamo[527]rb=800;
860
861 % 627 tail right-scooged H
862 hangul.jamo[627]code="combine.lr(500,527)";
863 hangul.jamo[627]lb=200;
864 hangul.jamo[627]rb=800;
865
866 vardef hangul.jamo.hieuh(expr vow,ixf,oxf) =
867   tsu_xform(hxf_inout(7;ixf,oxf))(
868     push_pbox_toexpand("jamo.hieuh");
869     push_stroke((320,790)..(510,790)..(680,790+10*mincho),
870       (1.5,1.5)–(1.5,1.5)–(1.5,1.5));
871     set_boserif(0,0,5);
872     set_boserif(0,2,6);
873     push_stroke((180,600)..(530,600)..(820,600+20*mincho),
874       (1.6,1.6)–(1.6,1.6)–(1.6,1.6));
875     set_boserif(0,0,5);
876     set_boserif(0,2,6);
877     push_stroke((520,500)..(300,250)..(500,0)..(700,250)..cycle,
878       (1.6,1.6)–(1.5,1.5)–(1.4,1.4)–(1.5,1.5)–cycle);
879     set_boserif(0,0,6);
880     set_bosize(-2,89);
881     set_bosize(-1,89);
882     set_bosize(0,89);
883     expand_pbox);
884 replace_strokep(0)(insert_nodes(oldp)(0.5,1.5,2.5,3.5));
885 replace_strokeq(0)(insert_nodes(oldq)(0.5,1.5,2.5,3.5));

```

```

886 begingroup
887   save i,j,t;
888   numeric i,j,t;
889   i:=-3;
890   forever:
891     j:=find_whatever(otstroke,i);
892     exitif j=0;
893     j:=xpart (get_strokep(i) intersectiontimes get_strokep(0));
894     if (j>0) and (j<1):
895       replace_strokep(i)(subpath (j,infinity) of oldp);
896     fi;
897     if known tsu_do_serif[8]:
898       if 0<ypart (get_strokep(0) intersectiontimes
899         (((-80,80)+point 0 of get_strokep(i))-get_strokep(i)))>0:
900         set_boserif(i,0,whatever);
901       fi;
902     fi;
903     i:=i-1;
904   endfor;
905 endgroup;
906 enddef;
907
908
909

```

Mixed Tails

```

910 % MIXED TAILS
911
912 % 503 tail GS
913 hangul.jamo[503]code="combine.lr(501,519)";
914
915 % 505 tail NJ
916 hangul.jamo[505]code="combine.lr(504,522)";
917
918 % 506 tail NH
919 hangul.jamo[506]code="combine.lr(504,527)";
920
921 % 509 tail LG
922 hangul.jamo[509]code="combine.lr(508,501)";
923
924 % 510 tail LM
925 hangul.jamo[510]code="combine.lr(508,516)";
926
927 % 511 tail LB
928 hangul.jamo[511]code="combine.lr(508,517)";
929
930 % 512 tail LS

```

```

931 hangul.jamo[512]code="combine.lr(508,519);
932
933 % 513 tail LT
934 hangul.jamo[513]code="combine.lr(508,525);
935
936 % 514 tail LP
937 hangul.jamo[514]code="combine.lr(508,526);
938
939 % 515 tail LH
940 hangul.jamo[515]code="combine.lr(508,527);
941 hangul.jamo[515]h=5;
942
943 % 518 tail BS
944 hangul.jamo[518]code="combine.lr(517,519);
945 hangul.jamo[518]h=5;
946
947
948

```

Vowels

```

949 % VOWELS
950
951 % 300 vowel A
952 hangul.jamo[300]code="jamo.a";
953 hangul.jamo[300]w=2.5;
954 hangul.jamo[300]h=0;
955 hangul.jamo[300]lb=400;
956 hangul.jamo[300]rb=700;
957 hangul.jamo[300]ub=850;
958 hangul.jamo[300]db=100;
959
960 % 301 vowel AE
961 hangul.jamo[301]code="combine.lr(300,320);
962 hangul.jamo[301]w=3;
963 hangul.jamo[301]h=0;
964 hangul.jamo[301]lb=340;
965 hangul.jamo[301]db=100;
966
967 vardef hangul.jamo.a(expr vow,ixf,oxf) =
968   tsu_xform(hxf_inout(11,ixf,oxf))(
969     push_pbox_toexpand("jamo.a");
970     push_stroke((440,820)-(440-10*mincho,0),(1.6,1.6)-(1.4,1.4));
971     set_bosertif(0,0,8);
972     push_stroke((450,310)-(930-120*mincho,310+10*mincho),
973       (1.5,1.5)-(1.7,1.7));
974     set_bosertif(0,1,6);
975     expand_pbox);

```

```

976 enddef;
977
978 % 302 vowel YA
979 hangul.jamo[302]code="jamo.ya";
980 hangul.jamo[302]w=3;
981 hangul.jamo[302]h=0;
982 hangul.jamo[302]lb=400;
983 hangul.jamo[302]rb=700;
984 hangul.jamo[302]ub=850;
985 hangul.jamo[302]db=100;
986
987 % 303 vowel YAE
988 hangul.jamo[303]code="combine.lr(302,320)";
989 hangul.jamo[303]w=3.5;
990 hangul.jamo[303]h=0;
991 hangul.jamo[303]lb=340;
992 hangul.jamo[303]db=100;
993
994 vardef hangul.jamo.ya(expr vow,ixf,oxf) =
995   tsu_xform(hxf_inout(11,ixf,oxf))(
996     push_pbox_toexpand("jamo.ya");
997     push_stroke((440,820)-(440-10*mincho,0),(1.6,1.6)-(1.4,1.4));
998     set_boserif(0,0,8);
999     push_stroke((450,520)-(930-120*mincho,520+10*mincho),
1000       (1.5,1.5)-(1.7,1.7));
1001     set_boserif(0,1,6);
1002     push_stroke((450,270)-(930-120*mincho,270+10*mincho),
1003       (1.5,1.5)-(1.7,1.7));
1004     set_boserif(0,1,6);
1005     expand_pbox);
1006 enddef;
1007
1008 % 304 vowel EO
1009 hangul.jamo[304]code="jamo.eo";
1010 hangul.jamo[304]w=2.5;
1011 hangul.jamo[304]h=0;
1012 hangul.jamo[304]lb=300;
1013 hangul.jamo[304]rb=640;
1014 hangul.jamo[304]ub=850;
1015 hangul.jamo[304]db=100;
1016
1017 % 305 vowel E
1018 hangul.jamo[305]code="combine.lr(304,320)";
1019 hangul.jamo[305]w=3;
1020 hangul.jamo[305]h=0;
1021 hangul.jamo[305]lb=300;
1022 hangul.jamo[305]db=100;
1023

```

```

1024 vardef hangul.jamo.eo(expr vow,ixf,oxf) =
1025   tsu_xform(hxf_inout(11,ixf,oxf))(
1026     push_pbox_toexpand("jamo.eo");
1027     push_stroke((560,820)-(560-10*mincho,0),(1.6,1.6)-(1.4,1.4));
1028     set_boserif(0,0,8);
1029     if unknown vow: vow=304; fi;
1030     if vow=435:
1031       push_stroke((70+100*mincho,110)-(550,110+10*mincho),
1032         (1.7,1.7)-(1.5,1.5));
1033     elseif vow=448:
1034       push_stroke((70+100*mincho,410)-(550,410+10*mincho),
1035         (1.7,1.7)-(1.5,1.5));
1036     elseif (vow>=308) and (vow<454):
1037       push_stroke((70+100*mincho,210)-(550,210+10*mincho),
1038         (1.7,1.7)-(1.5,1.5));
1039     else:
1040       push_stroke((70+100*mincho,310)-(550,310+10*mincho),
1041         (1.7,1.7)-(1.5,1.5));
1042     fi;
1043     set_boserif(0,0,5);
1044     expand_pbox);
1045 enddef;
1046
1047 % 306 vowel YEO
1048 hangul.jamo[306]code="jamo.yeo";
1049 hangul.jamo[306]w=2.5;
1050 hangul.jamo[306]h=0;
1051 hangul.jamo[306]lb=300;
1052 hangul.jamo[306]rb=640;
1053 hangul.jamo[306]ub=850;
1054 hangul.jamo[306]db=100;
1055
1056 % 307 vowel YE
1057 hangul.jamo[307]code="combine.lr(306,320)";
1058 hangul.jamo[307]w=3;
1059 hangul.jamo[307]h=0;
1060 hangul.jamo[307]lb=300;
1061 hangul.jamo[307]db=100;
1062
1063 vardef hangul.jamo.yeo(expr vow,ixf,oxf) =
1064   tsu_xform(hxf_inout(11,ixf,oxf))(
1065     push_pbox_toexpand("jamo.yeo");
1066     push_stroke((560,820)-(560-10*mincho,0),(1.6,1.6)-(1.4,1.4));
1067     set_boserif(0,0,8);
1068     push_stroke((70+100*mincho,520)-(550,520+10*mincho),
1069       (1.7,1.7)-(1.5,1.5));
1070     set_boserif(0,0,5);
1071     if unknown vow: vow=304; fi;

```

```

1072   if vow>=308:
1073       push_stroke((70+100*mincho,190)-(550,190+10*mincho),
1074               (1.7,1.7)-(1.5,1.5));
1075       if vow<=420:
1076           set_boserif(0,0,5);
1077       fi;
1078   else:
1079       push_stroke((70+100*mincho,270)-(550,270+10*mincho),
1080               (1.7,1.7)-(1.5,1.5));
1081       set_boserif(0,0,5);
1082   fi;
1083   expand_pbox);
1084 enddef;
1085
1086 % 308 vowel O
1087 hangul.jamo[308]code="jamo.o";
1088 hangul.jamo[308]w=0;
1089 hangul.jamo[308]h=3;
1090 hangul.jamo[308]invokes__alternate=false;
1091
1092 % 309 vowel WA
1093 hangul.jamo[309]code="combine.lr(308,300)";
1094 hangul.jamo[309]w=2;
1095 hangul.jamo[309]invokes__alternate=false;
1096
1097 % 310 vowel WAE
1098 hangul.jamo[310]code="combine.lr(308,301)";
1099 hangul.jamo[310]w=3;
1100 hangul.jamo[310]invokes__alternate=false;
1101
1102 % 311 vowel OE
1103 hangul.jamo[311]code="combine.lr(308,320)";
1104 hangul.jamo[311]w=1;
1105 hangul.jamo[311]invokes__alternate=false;
1106
1107 vardef hangul.jamo.o(expr vow,ixf,oxf) =
1108   begingroup
1109     save myxf;
1110     transform myxf[];
1111     myxf1=hxf_inout(13,ixf,oxf);
1112     hgbox__ll transformed myxf3=
1113       0.1[hgbox__ll transformed myxf1,
1114         hgbox__ll transformed oxf];
1115     hgbox__ur transformed myxf3=
1116       (0.4*mincho)[hgbox__ur transformed myxf1,
1117         hgbox__ur transformed oxf];
1118     if unknown vow: vow=308; fi;
1119     if vow=308:

```



```

1120     hgbox_lr transformed myxf3=
1121     0.3[hgbox_lr transformed myxf1,
1122         hgbox_lr transformed oxf];
1123     myxf2=hxf((50,750),(950,-50)) transformed myxf3;
1124 else:
1125     (hgbox_ur transformed myxf3)-(hgbox_lr transformed myxf3)=
1126     (hgbox_ur transformed myxf1)-(hgbox_lr transformed myxf1);
1127     myxf2=myxf3;
1128 fi;
1129 tsu_xform(myxf2)(
1130     push_pbox_toexpand("jamo.o");
1131     push_stroke((540,900-100*mincho)-(540,350-10*mincho),
1132         (1.6,1.6)-(1.5,1.5));
1133     set_boserif(0,0,8);
1134     push_stroke((120,350)..(500,350-10*mincho)..(920,350),
1135         (1.6,1.6)-(1.6,1.6)-(1.6,1.6));
1136     set_boserif(0,0,5);
1137     expand_pbox);
1138 endgroup;
1139 enddef;
1140
1141 % 312 vowel YO
1142 hangul.jamo[312]code="jamo.yo";
1143 hangul.jamo[312]w=0;
1144 hangul.jamo[312]h=3;
1145 hangul.jamo[312]invokes__alternate=false;
1146
1147 % "yo" isn't normally used in compounds, but let's keep the code for that
1148 vardef hangul.jamo.yo(expr vow,ixf,oxf) =
1149     begingroup
1150     save myxf;
1151     transform myxf[];
1152     myxf1=hxf_inout(13,ixf,oxf);
1153     hgbox_ll transformed myxf3=
1154     0.1[hgbox_ll transformed myxf1,
1155         hgbox_ll transformed oxf];
1156     hgbox_ur transformed myxf3=
1157     (0.3*mincho)[hgbox_ur transformed myxf1,
1158         hgbox_ur transformed oxf];
1159     if unknown vow: vow=312; fi;
1160     if vow=312:
1161         hgbox_lr transformed myxf3=
1162         0.2[hgbox_lr transformed myxf1,
1163             hgbox_lr transformed oxf];
1164         myxf2=hxf((50,750),(950,-50)) transformed myxf3;
1165     else:
1166         (hgbox_ur transformed myxf3)-(hgbox_lr transformed myxf3)=
1167         (hgbox_ur transformed myxf1)-(hgbox_lr transformed myxf1);

```

```

1168     myxf2=myxf3;
1169     fi;
1170     tsu_xform(myxf2)(
1171         push_pbox_toexpand("jamo.yo");
1172         push_stroke((420,900-110*mincho)-(420,350-10*mincho),
1173             (1.6,1.6)-(1.5,1.5));
1174         set_bosserif(0,0,8);
1175         push_stroke((660,900-90*mincho)-(660,350-10*mincho),
1176             (1.6,1.6)-(1.5,1.5));
1177         set_bosserif(0,0,8);
1178         push_stroke((120,350)..(390,350-10*mincho)..
1179             (690,350-10*mincho)..(920,350),
1180             (1.6,1.6)-(1.6,1.6)-(1.6,1.6)-(1.6,1.6));
1181         set_bosserif(0,0,5);
1182         expand_pbox);
1183     endgroup;
1184 enddef;
1185
1186 % 313 vowel U
1187 hangul.jamo[313]code="jamo.u";
1188 hangul.jamo[313]w=0;
1189 hangul.jamo[313]h=3;
1190 hangul.jamo[313]db=150;
1191 hangul.jamo[313]invokes__alternate=false;
1192
1193 % 314 vowel WEO
1194 hangul.jamo[314]code="combine.lr(313,304)";
1195 hangul.jamo[314]w=2;
1196 hangul.jamo[314]db=150;
1197 hangul.jamo[314]invokes__alternate=false;
1198
1199 % 315 vowel WE
1200 hangul.jamo[315]code="combine.lr(313,305)";
1201 hangul.jamo[315]w=3;
1202 hangul.jamo[315]db=150;
1203 hangul.jamo[315]invokes__alternate=false;
1204
1205 % 316 vowel WI
1206 hangul.jamo[316]code="combine.lr(313,320)";
1207 hangul.jamo[316]w=1;
1208 hangul.jamo[316]db=150;
1209 hangul.jamo[316]invokes__alternate=false;
1210
1211 vardef hangul.jamo.u(expr vow,ixf,oxf) =
1212     begingroup
1213         save myxf;
1214         transform myxf[];
1215         myxf1=hxf_inout(13,ixf,oxf);

```

```

1216   hgbox_ll transformed myxf3=
1217       0.2[hgbox_ll transformed myxf1,
1218           hgbox_ll transformed oxf];
1219   hgbox_ur transformed myxf3=
1220       0.2[hgbox_ur transformed myxf1,
1221           hgbox_ur transformed oxf];
1222   if unknown vow: vow=313; fi;
1223   if vow=313:
1224       hgbox_lr transformed myxf3=
1225           0.1[hgbox_lr transformed myxf1,
1226               hgbox_lr transformed oxf];
1227       myxf2=hxf((50,600),(950,50)) transformed myxf3;
1228   else:
1229       (hgbox_ur transformed myxf3)-(hgbox_lr transformed myxf3)=
1230       (hgbox_ur transformed myxf1)-(hgbox_lr transformed myxf1);
1231       myxf2=myxf3;
1232   fi;
1233   tsu_xform(myxf2)(
1234       push_pbox_toexpand("jamo.o");
1235       push_stroke((540,700)-(540,50+100*mincho),
1236           (1.6,1.6)-(1.5,1.5));
1237       set_boserif(0,1,7);
1238       push_stroke((120,700)-(920,700),(1.6,1.6)-(1.6,1.6));
1239       set_boserif(0,0,5);
1240       expand_pbox);
1241   endgroup;
1242 enddef;
1243
1244 % 317 vowel YU
1245 hangul.jamo[317]code="jamo.yu";
1246 hangul.jamo[317]w=0;
1247 hangul.jamo[317]h=3;
1248 hangul.jamo[317]db=150;
1249 hangul.jamo[317]invokes__alternate=false;
1250
1251 vardef hangul.jamo.yu(expr vow,ixf,oxf) =
1252   begingroup
1253     save myxf;
1254     transform myxf[];
1255     myxf1=hxf_inout(13,ixf,oxf);
1256     hgbox_ll transformed myxf3=
1257         0.2[hgbox_ll transformed myxf1,
1258             hgbox_ll transformed oxf];
1259     hgbox_ur transformed myxf3=
1260         0.2[hgbox_ur transformed myxf1,
1261             hgbox_ur transformed oxf];
1262     if unknown vow: vow=317; fi;
1263     if vow=317:

```

```

1264     hgbox_lr transformed myxf3=
1265     0.1[hgbox_lr transformed myxf1,
1266         hgbox_lr transformed oxf];
1267     myxf2=hxf((50,600),(950,-50)) transformed myxf3;
1268 else:
1269     (hgbox_ur transformed myxf3)-(hgbox_lr transformed myxf3)=
1270     (hgbox_ur transformed myxf1)-(hgbox_lr transformed myxf1);
1271     myxf2=myxf3;
1272 fi;
1273 tsu_xform(myxf2)(
1274     push_pbox_toexpand("jamo.yu");
1275     push_stroke((120,700)-(930,700),(1.6,1.6)-(1.6,1.6));
1276     set_boserif(0,0,5);
1277     push_stroke((400,700)-(400,50+100*mincho),
1278         (1.6,1.6)-(1.5,1.5));
1279     set_boserif(0,1,7);
1280     push_stroke((640,700)-(640,50+100*mincho),
1281         (1.6,1.6)-(1.5,1.5));
1282     set_boserif(0,1,7);
1283     expand_pbox);
1284 endgroup;
1285 enddef;
1286
1287 % 318 vowel EU
1288 hangul.jamo[318]code="jamo.eu";
1289 hangul.jamo[318]w=0;
1290 hangul.jamo[318]h=3;
1291 hangul.jamo[318]invokes__alternate=false;
1292
1293 % 319 vowel YI
1294 hangul.jamo[319]code="combine.lr(318,320)";
1295 hangul.jamo[319]w=2;
1296 hangul.jamo[319]h=3;
1297 hangul.jamo[319]invokes__alternate=false;
1298
1299 vardef hangul.jamo.eu(expr vow,ixf,oxf) =
1300     begingroup
1301     save myxf;
1302     transform myxf[];
1303     myxf1=hxf_inout(13,ixf,oxf);
1304     hgbox_ll transformed myxf3=
1305     0.1[hgbox_ll transformed myxf1,
1306         hgbox_ll transformed oxf];
1307     hgbox_ur transformed myxf3=
1308     0.1[hgbox_ur transformed myxf1,
1309         hgbox_ur transformed oxf];
1310     if unknown vow: vow=318; fi;
1311     if vow=318:

```

```

1312     hgbox_lr transformed myxf3=
1313     0.1[hgbox_lr transformed myxf1,
1314         hgbox_lr transformed oxf];
1315     myxf2=hxf((50,600),(950,-50)) transformed myxf3;
1316 else:
1317     (hgbox_ur transformed myxf3)-(hgbox_lr transformed myxf3)=
1318     (hgbox_ur transformed myxf1)-(hgbox_lr transformed myxf1);
1319     myxf2=myxf3;
1320 fi;
1321 tsu_xform(myxf2)(
1322     push_pbox_toexpand("jamo.eu");
1323     push_stroke((120,520)-(925,520),(1.6,1.6)-(1.6,1.6));
1324     set_boserif(0,0,5);
1325     expand_pbox);
1326 endgroup;
1327 enddef;
1328
1329 % 320 vowel I
1330 hangul.jamo[320]code="jamo.i";
1331 hangul.jamo[320]w=1.5;
1332 hangul.jamo[320]h=0;
1333 hangul.jamo[320]lb=490;
1334 hangul.jamo[320]rb=540;
1335 hangul.jamo[320]ub=850;
1336 hangul.jamo[320]db=-50;
1337 hangul.jamo[320]invokes__alternate=false;
1338
1339 vardef hangul.jamo.i(expr vow,ixf,oxf) =
1340     tsu_xform(hxf_inout(10,ixf,oxf))(
1341         push_pbox_toexpand("jamo.i");
1342         push_stroke((500,820)-(500,400)-(500-10*mincho,0),
1343             (1.6,1.6)-(1.5,1.5)-(1.4,1.4));
1344         set_boserif(0,0,8);
1345         expand_pbox);
1346 enddef;

```

jamo-extra.mp

```
1 %
2 % Extra (not in Unicode syllable block) hangul jamo for Mandeubsida
3 % Copyright (C) 2011, 2012, 2013 Matthew Skala
4 %
5-29 [Standard copyright notice]
30
31 inclusion_lock(jamoextra);
32
33
34
35 % special alternate vowel codes (used for non-syllable vowel jamo)
36 % 421 yo-ya
37 % 422 yo-yae
38 % 423 yo-i
39 % 424 yu-yeo
40 % 425 yu-ye
41 % 426 yu-i
42 % 427 araea-i
43 % 428 araea
44 % 429 o-eo
45 % 430 o-e
46 % 431 o-ye
47 % 432 yo-yeo
48 % 433 u-a
49 % 434 u-ae
50 % 435 u-eo-eu
51 % 436 u-ye
52 % 437 yu-a
53 % 438 yu-eo
54 % 439 yu-e
55 % 440 yi-u
56 % 441 i-araea
57 % 442 o-ya
58 % 443 o-yae
59 % 444 o-yeo
60 % 445 o-o-i
61 % 446 yo-a
62 % 447 yo-ae
63 % 448 yo-eo
64 % 449 u-yeo
65 % 450 u-i-i
66 % 451 yu-ae
67 % 452 yu-o
68 % 453 eu -a
69 % 454 eu-eo
70 % 455 eu-e
```

```

71 % 456 eu-o
72 % 457 i-ya-o
73 % 458 i-yae
74 % 459 i-yeo
75 % 460 i-ye
76 % 461 i-o-i
77 % 462 i-yo
78 % 463 i-yu
79 % 464 i-i
80 % 465 araea-a
81 % 466 araea-e
82 % 467 i-ya
83 % 468 o-i
84
85 % 428 vowel ARAEA
86 hangul.jamo[428]code="jamo.araea";
87 hangul.jamo[428]w=0;
88 hangul.jamo[428]h=2;
89 hangul.jamo[428]invokes__alternate=false;
90
91 vardef hangul.jamo.araea(expr vow,ixf,oxf) =
92   begingroup
93     save tmpxf;
94     transform tmpxf;
95     if unknown vow: vow=428; fi;
96     tmpxf=hxf_inout(if vow=441: 1 else: 5 fi,ixf,oxf);
97     tsu_xform(tmpxf)(
98       push_pbox_toexpand("jamo.araea");
99       expand_pbox);
100   push_lcblob(fullcircle
101     scaled ((140+40*mincho)*sqrt(sqrt(xxpart tmpxf*yy part tmpxf)))
102     shifted ((if vow=441: 500 else: 540 fi,390) transformed tmpxf));
103   endgroup;
104 enddef;
105
106 % 445 vowel O-O-I
107 hangul.jamo[445]code="jamo.ooi";
108 hangul.jamo[445]w=0;
109 hangul.jamo[445]h=5;
110 hangul.jamo[445]invokes__alternate=false;
111
112 vardef hangul.jamo.ooi(expr vow,ixf,oxf) =
113   begingroup
114     save xfa,xfb;
115     transform xfa,xfb;
116
117     (50,-50) transformed xfa=(50,450) transformed hxf_inout(5,ixf,oxf);
118     (950,-50) transformed xfa=(950,450) transformed hxf_inout(5,ixf,oxf);

```

```

119 (50,850) transformed xfa=(50,1050) transformed hxf_inout(5,ixf,oxf);
120 hangul.combine.tb(308,308)(vow,xfaxfa);
121
122 (50,-50) transformed xfb=(90,-50) transformed hxf_inout(5,ixf,oxf);
123 (950,-50) transformed xfb=(990,-50) transformed hxf_inout(5,ixf,oxf);
124 (50,850) transformed xfb=(90,350) transformed hxf_inout(5,ixf,oxf);
125 hangul.jamo.i(vow,xfb,xfb);
126 endgroup;
127 enddef;
128
129 % 464 vowel I-I
130 hangul.jamo[464]code="combine.lr(320,320)";
131 hangul.jamo[464]w=3;
132 hangul.jamo[464]h=0;
133 hangul.jamo[464]invokes__alternate=false;
134
135 % 467 vowel I-YA
136 hangul.jamo[467]code="combine.lr(320,302)";
137 hangul.jamo[467]w=4;
138 hangul.jamo[467]h=0;
139 hangul.jamo[467]invokes__alternate=false;
140
141 % 468 vowel O-I (for I-O-I)
142 hangul.jamo[468]code="jamo.oi";
143 hangul.jamo[468]w=0;
144 hangul.jamo[468]h=5;
145 hangul.jamo[468]invokes__alternate=false;
146
147 vardef hangul.jamo.oi(expr vow,ixf,oxf) =
148 begingroup
149 save xfa,xfb;
150 transform xfa,xfb;
151
152 (50,-50) transformed xfa=(50,450) transformed hxf_inout(5,ixf,oxf);
153 (950,-50) transformed xfa=(950,450) transformed hxf_inout(5,ixf,oxf);
154 (50,850) transformed xfa=(50,1050) transformed hxf_inout(5,ixf,oxf);
155 hangul.jamo.o(vow,xfaxfa);
156
157 (50,-50) transformed xfb=(90,-50) transformed hxf_inout(5,ixf,oxf);
158 (950,-50) transformed xfb=(990,-50) transformed hxf_inout(5,ixf,oxf);
159 (50,850) transformed xfb=(90,350) transformed hxf_inout(5,ixf,oxf);
160 hangul.jamo.i(vow,xfb,xfb);
161 endgroup;
162 enddef;
163
164
165

```


Pansios

```
166 % PANSIOS
167
168 % 219 lead "letter that died out in the 16th century and nobody is sure
169 % how it was prounounced"
170 hangul.jamo[219]code="jamo.pansios";
171 hangul.jamo[219]lb=250;
172 hangul.jamo[219]rb=700;
173
174 % 628 tail LTDOIT16CANISHIWP
175 hangul.jamo[628]code="jamo.pansios";
176 hangul.jamo[628]lb=250;
177 hangul.jamo[628]rb=700;
178
179 vardef hangul.jamo.pansios(expr vow,ixf,oxf) =
180   tsu_xform(ixf)(
181     push_pbox_toexpand("jamo.pansios");
182     push_stroke(((675,375+20*mincho)-(500,660+40*mincho)-
183       (150,90+10*mincho)-(850,90)-cycle,
184       (14,14)-(1.2,1.2)-(1.6,1.6)-(1.6,1.6)-(14,14));
185     set_boserif(0,1,8);
186     set_botip(0,1,1);
187     set_botip(0,2,1);
188     set_botip(0,3,1);
189     replace_strokep(0)(oldp-(point 0.05 of oldp));
190     replace_strokeq(0)(oldq-(point 0.05 of oldq));
191     expand_pbox);
192 enddef;
193
194
195
```

JAMO

Yesieung

```
196 % YESIEUNG
197
198 % 220 lead NG (mnemonic: "yes, REALLY ieung, as opposed to 'ieung' which
199 % actually is 'empty' when in the lead")
200 hangul.jamo[220]code="jamo.yesieung";
201 hangul.jamo[220]h=5;
202
203 % 629 tail NG
204 hangul.jamo[629]code="jamo.yesieung";
205 hangul.jamo[629]h=5;
206
207 vardef hangul.jamo.yesieung(expr vow,ixf,oxf) =
208   tsu_xform(ixf)(
```

```

209 push_pbox_toexpand("jamo.yesieung");
210 push_stroke((500,750)-(500,660),(1,6,1,6)-(1,5,1,5));
211 set_boserif(0,0,8);
212 if unknown vow:
213     push_stroke((500,660)..(200,335)..(500,0)..(800,335)..cycle,
214         (1,6,1,6)-(1,5,1,5)-(1,4,1,4)-(1,5,1,5)-cycle);
215 elseif (vow>=313) and (vow<=319):
216     push_stroke((500,660)..(200,385)..(500,100)..(800,385)..cycle,
217         (1,6,1,6)-(1,5,1,5)-(1,4,1,4)-(1,5,1,5)-cycle);
218 else:
219     push_stroke((500,660)..(200,335)..(500,0)..(800,335)..cycle,
220         (1,6,1,6)-(1,5,1,5)-(1,4,1,4)-(1,5,1,5)-cycle);
221 fi;
222 expand_pbox);
223 replace_strokep(0)(insert_nodes(oldp)(0.5,1.5,2.5,3.5));
224 replace_strokeq(0)(insert_nodes(oldq)(0.5,1.5,2.5,3.5));
225 begingroup
226     save i,j,t;
227     numeric i,j,t;
228     i:=-2;
229     forever:
230         j:=find_whatever(otstroke,i);
231         exitif j=0;
232         j:=xpart (get_strokep(i) intersectiontimes get_strokep(0));
233         if (j>0) and (j<1):
234             replace_strokep(i)(subpath (j,infinity) of oldp);
235         fi;
236         if known tsu_do_serif[8]:
237             if 0<ypart (get_strokep(0) intersectiontimes
238                 (((-80,80)+point 0 of get_strokep(i))-get_strokep(i))):
239                 set_boserif(i,0,whatever);
240             fi;
241         fi;
242         i:=i-1;
243     endfor;
244 endgroup;
245 enddef;
246
247
248

```

Yeorinhieuh

```

249 % YEORINHIEUH
250
251 % 221 lead ' (W'dia says medium-strength glottal stop)
252 hangul.jamo[221]code="jamo.yeorinhieuh";
253 hangul.jamo[221]h=5;

```

```

254 hangul.jamo[221]lb=200;
255 hangul.jamo[221]rb=800;
256
257 % 631 tail '
258 hangul.jamo[631]code="jamo.yeorinhieuh";
259 hangul.jamo[631]h=5;
260 hangul.jamo[631]lb=200;
261 hangul.jamo[631]rb=800;
262
263 vardef hangul.jamo.yeorinhieuh(expr vow,ixf,oxf) =
264   tsu_xform(hxf_inout(7;ixf,oxf))(
265     push_pbox_toexpand("jamo.yieorinhieuh");
266     push_stroke((180,780)..(530,780)..(820,780+20*mincho),
267       (1.6,1.6)-(1.6,1.6)-(1.6,1.6));
268     set_boserif(0,0,5);
269     set_boserif(0,2,6);
270     push_stroke((520,650)..(300,325)..(500,0)..(700,325)..cycle,
271       (1.6,1.6)-(1.5,1.5)-(1.4,1.4)-(1.5,1.5)-cycle);
272     set_boserif(0,0,6);
273     expand_pbox);
274   replace_strokep(0)(insert_nodes(oldp)(0.5,1.5,2.5,3.5));
275   replace_strokeq(0)(insert_nodes(oldq)(0.5,1.5,2.5,3.5));
276   begingroup
277     save i,j,t;
278     numeric i,j,t;
279     i:=-2;
280     forever:
281       j:=find_whatever(otstroke,i);
282       exitif j=0;
283       j:=xpart (get_strokep(i) intersectiontimes get_strokep(0));
284       if (j>0) and (j<1):
285         replace_strokep(i)(subpath (j,infinity) of oldp);
286       fi;
287       if known tsu_do_serif[8]:
288         if 0<ypart (get_strokep(0) intersectiontimes
289           (((-80,80)+point 0 of get_strokep(i))-get_strokep(i)))>0:
290           set_boserif(i,0,whatever);
291         fi;
292       fi;
293       i:=i-1;
294     endfor;
295   endgroup;
296 enddef;
297
298
299

```

Chitueum And Ceongchieum Variants

JAMO

300 % CHITUEUM AND CEONGCHIEUM VARIANTS

301

302 % 222 lead right-shoved S

303 hangul.jamo[222]code="jamo.sjc(0,1,false)";

304 hangul.jamo[222]lb=250;

305 hangul.jamo[222]rb=700;

306

307 % 223 lead alt-right-shoved S

308 hangul.jamo[223]code="jamo.sjc(0,1,true)";

309 hangul.jamo[223]lb=250;

310 hangul.jamo[223]rb=700;

311

312 % 224 lead left-shoved S

313 hangul.jamo[224]code="jamo.sjc(0,-1,false)";

314 hangul.jamo[224]lb=250;

315 hangul.jamo[224]rb=700;

316

317 % 225 lead alt-left-shoved S

318 hangul.jamo[225]code="jamo.sjc(0,-1,true)";

319 hangul.jamo[225]lb=250;

320 hangul.jamo[225]rb=700;

321

322 % 226 lead right-shoved J

323 hangul.jamo[226]code="jamo.sjc(1,1,false)";

324 hangul.jamo[226]lb=250;

325 hangul.jamo[226]rb=700;

326

327 % 227 lead alt-right-shoved J

328 hangul.jamo[227]code="jamo.sjc(1,1,true)";

329 hangul.jamo[227]lb=250;

330 hangul.jamo[227]rb=700;

331

332 % 228 lead left-shoved J

333 hangul.jamo[228]code="jamo.sjc(1,-1,false)";

334 hangul.jamo[228]lb=250;

335 hangul.jamo[228]rb=700;

336

337 % 229 lead alt-left-shoved J

338 hangul.jamo[229]code="jamo.sjc(1,-1,true)";

339 hangul.jamo[229]lb=250;

340 hangul.jamo[229]rb=700;

341

342

343

Kapyeoun Variants

```
344 % KAPYEOUN VARIANTS
345
346 % 231 lead kapyeounpieup
347 hangul.jamo[231]code="combine.tb(107,111)";
348 hangul.jamo[231]h=6;
349
350 % 630 tail kapyeounpieup
351 hangul.jamo[630]code="combine.tb(517,521)";
352 hangul.jamo[630]h=6;
```

JAMO

hglextb.mp

```
1 %
2 % Hangul Extension B for Mandeubsida
3 % Copyright (C) 2012, 2013 Matthew Skala
4 %
5-29 [Standard copyright notice]
30
31 input jamo-extra.mp;
32
33 _____
34
```

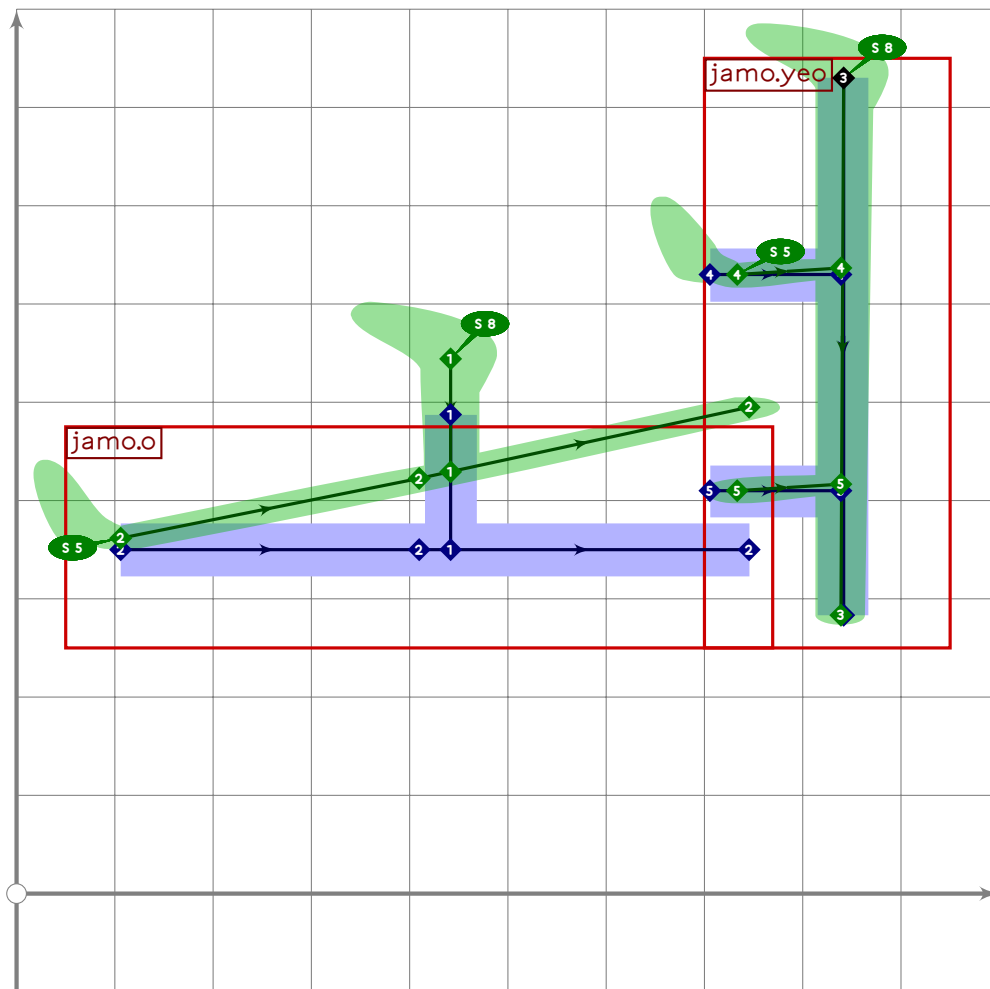
HGLE

Hangul Extension B

```
35 % HANGUL EXTENSION B
36
37 % This goes on page D7. It's split into a separate file because page D7
38 % also contains procedurally generated syllable glyphs, so the mande-d7.mp
39 % file is generated by make-hglpages and then includes this one for the
40 % non-automated glyphs.
41
42 % This file covers the basic layout (layout 0). The same characters
43 % adjusted for other layouts also appear in the private-use U+FFxxx range.
44
45 transform vixf,tvixf,voxf,tixf,toxf;
46
47 vixf=hxf((700,475),(950,250));
48 tvixf=hxf((700,535),(950,240));
49 voxf=hxf((50,850),(950,250));
50 tixf=hxf((100+20*mincho,275),(900-20*mincho,-50)) shifted (-1000,0);
51 toxf=hxf((50,275),(950,-50)) shifted (-1000,0);
52
53 _____
54
```

Hangul Jungseong (Vowel) Jamo Extension B

```
55 % HANGUL JUNGSEONG (VOWEL) JAMO EXTENSION B
56
57 tsu__rescale__full;
58
```



HGLE

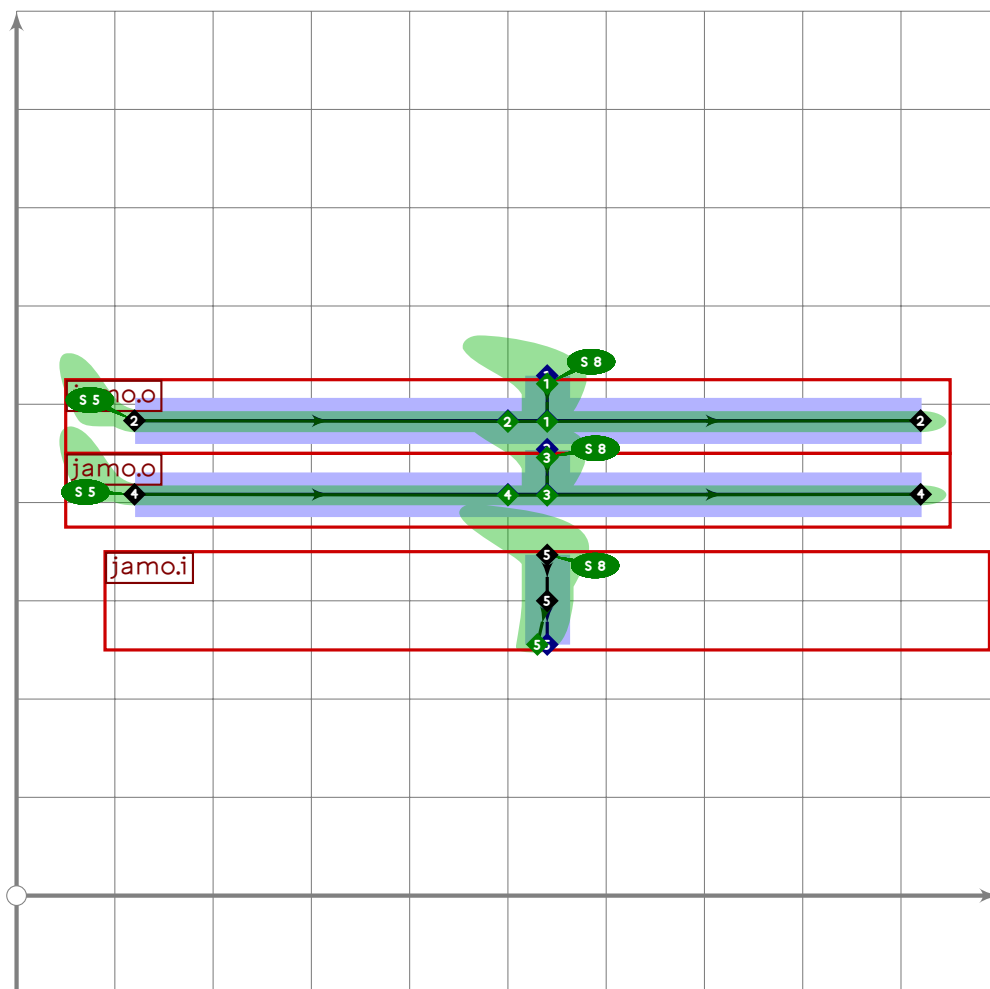
```

59 % hangul vowel o-yeo
60 begintsuglyph("uniD7B0";176);
61   hangul.combine.lr(308,306)(444,vixf,vox);
62   tsu_render;
63 endtsuglyph;
64

```

U+D7B1
mande.uniD7B1

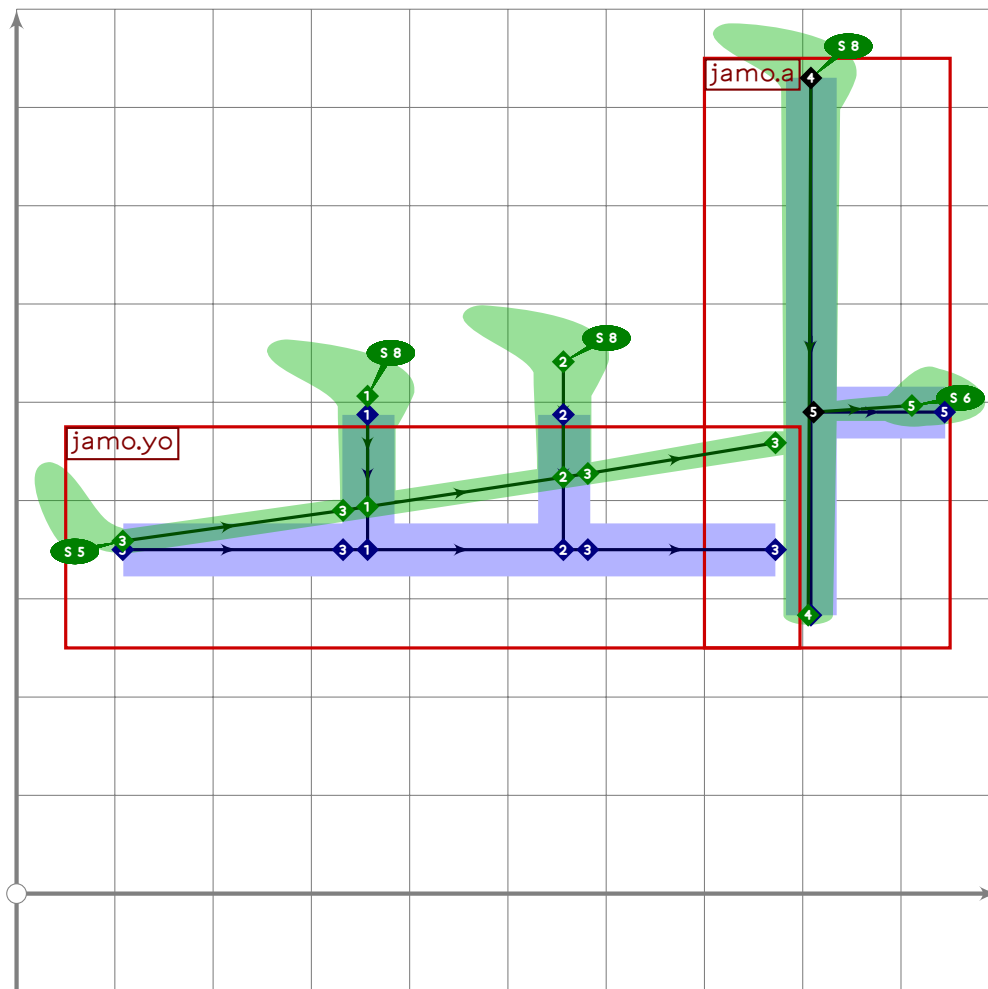
HGLE



```

65 % hangul vowel o-o-i
66 begintsuglyph("uniD7B1",177);
67   hangul.jamo.ooi(445,vixf,vox);
68   tsu_render;
69 endtsuglyph;
70

```

HGLE

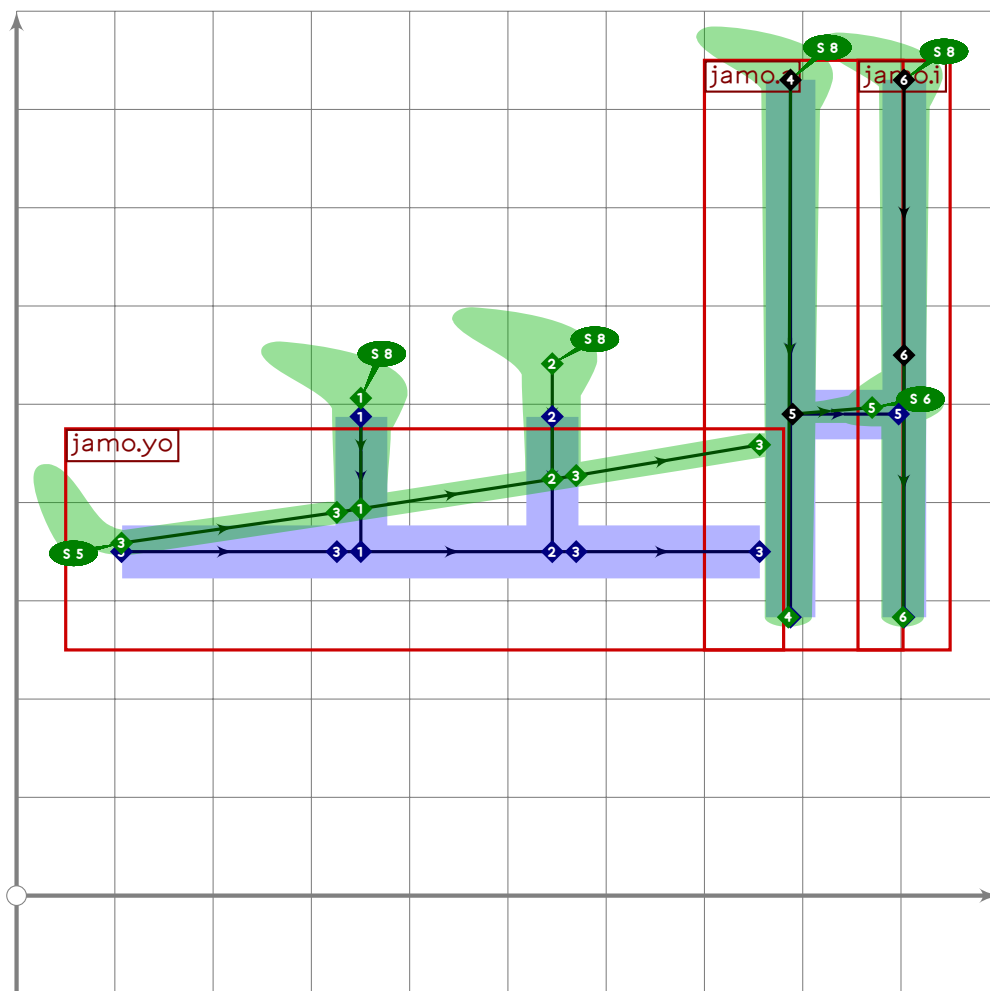
```

71 % hangul vowel yo-a
72 begintsuglyph("uniD7B2";178);
73   hangul.combine.lr(312,300)(446,vixf,voxf);
74   tsu_render;
75 endtsuglyph;
76

```

U+D7B3
mande.uniD7B3

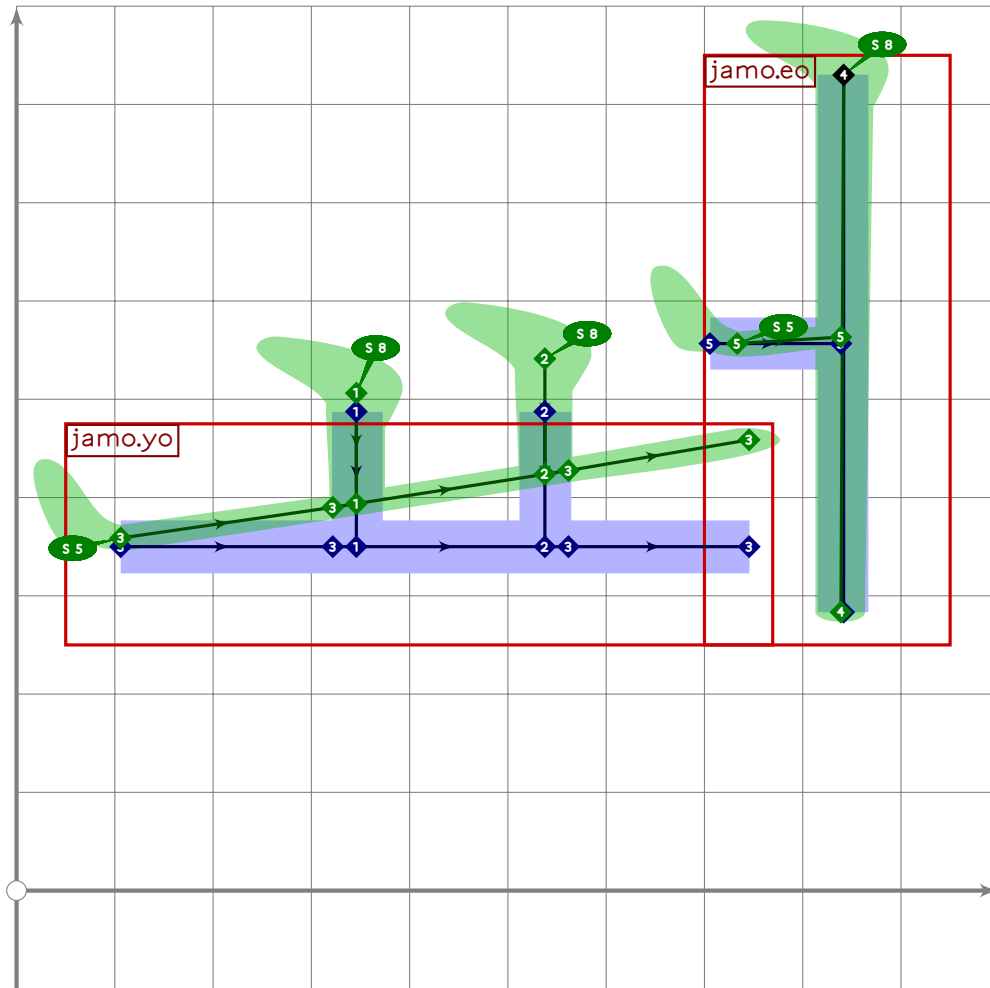
HGLE



```

77 % hangul vowel yo-ae
78 begintsuglyph("uniD7B3";179);
79   hangul.combine.lr(312,301)(447,vixf,voxf);
80   tsu_render;
81 endtsuglyph;
82

```



HGLE

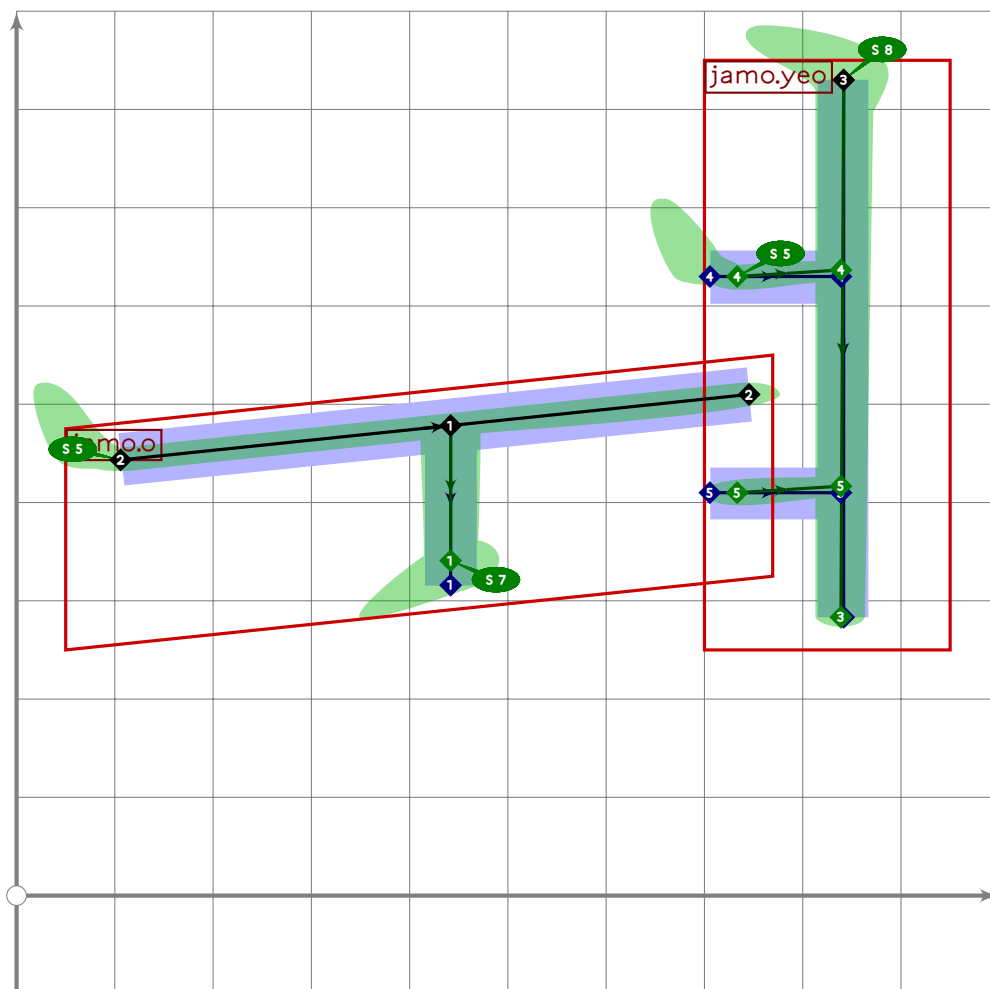
```

83 % hangul vowel yo-eo
84 begintsuglyph("uniD7B4",180);
85   hangul.combine.lr(312,304)(448,vixf,voxf);
86   tsu_render;
87 endtsuglyph;
88

```

U+D7B5
mande.uniD7B5

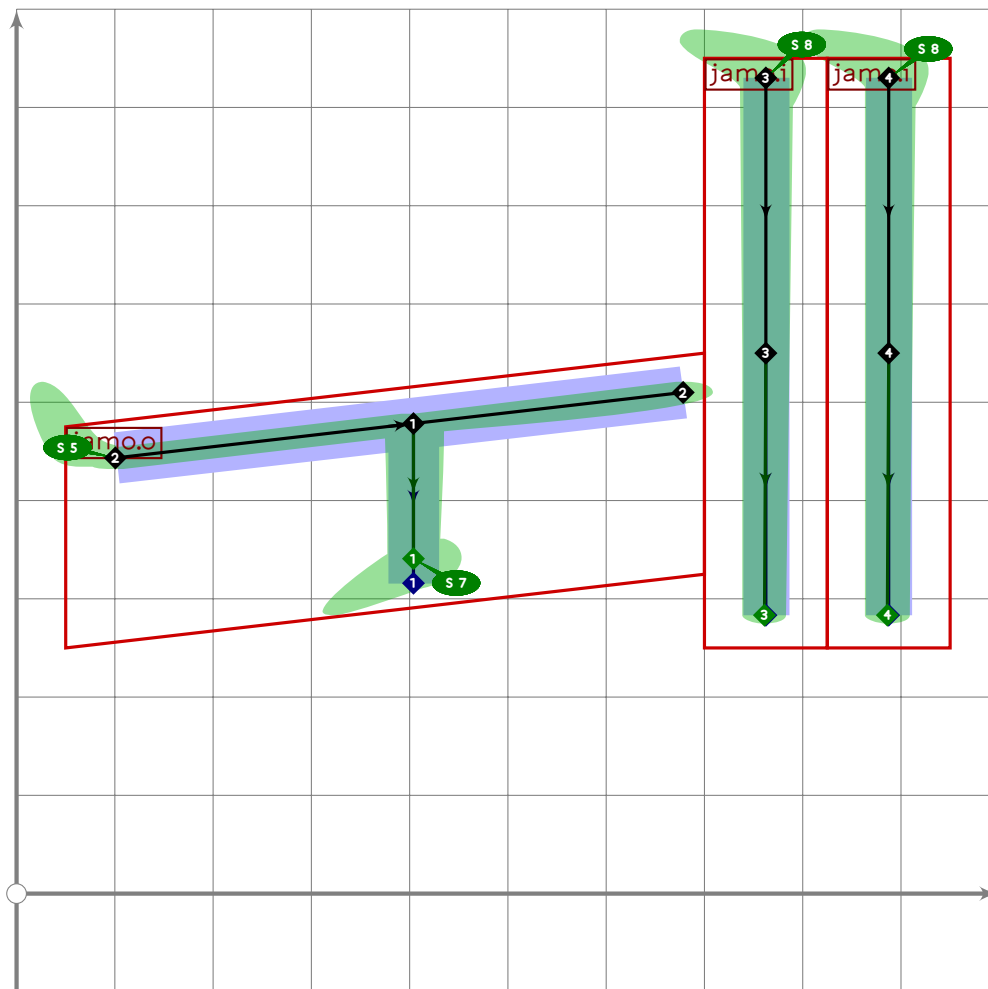
HGLE



```

89 % hangul vowel u-yeo
90 beginsuglyph("uniD7B5",181);
91   hangul.combine.lr(313,306)(449,vixf,vox);
92   tsu_render;
93 endsuglyph;
94

```



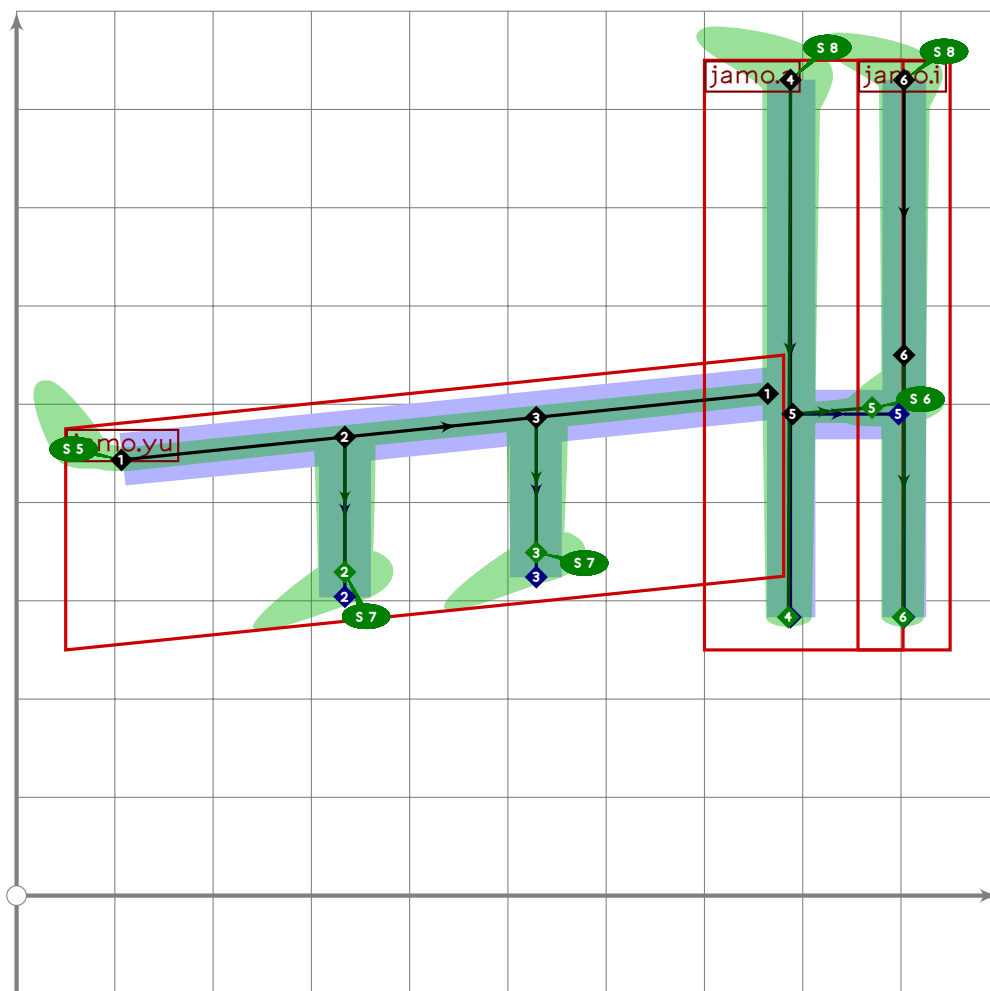
```

95 % hangul vowel u-i-i
96 beginsuglyph("uniD7B6",182);
97   hangul.combine.lr(313,464)(450,vixf,vox);
98   tsu_render;
99 endtsuglyph;
100

```

U+D7B7
mande.uniD7B7

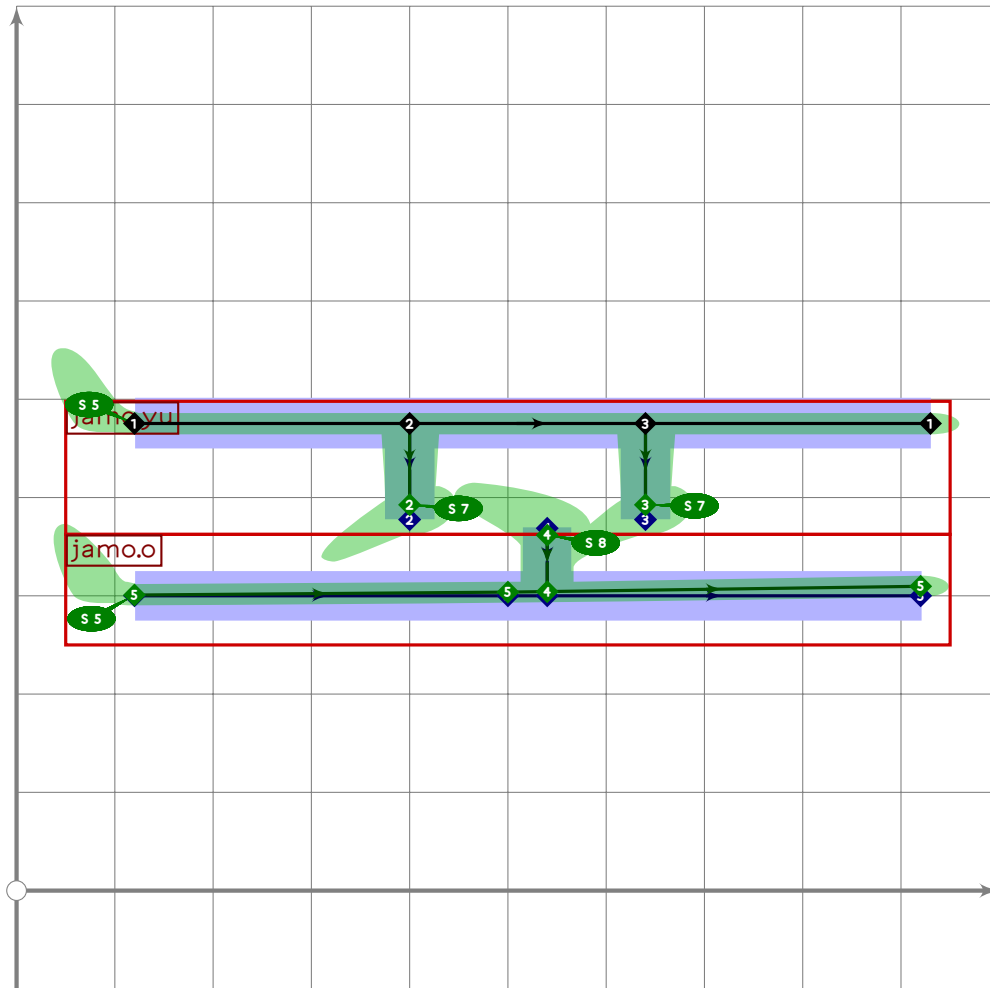
HGLE



```

101 % hangul vowel yu-ae
102 begintsuglyph("uniD7B7";183);
103   hangul.combine.lr(317,301)(451,vixf,voxf);
104   tsu_render;
105 endtsuglyph;
106

```



HGLE

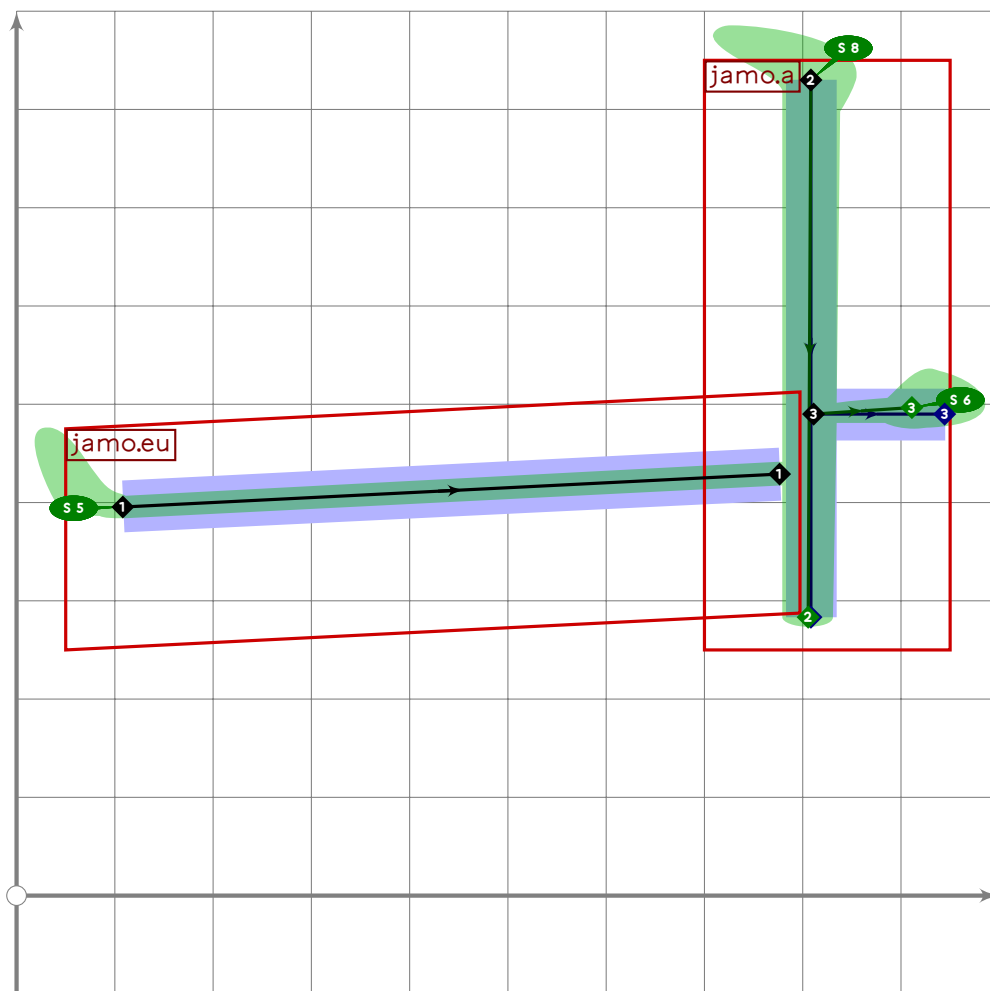
```

107 % hangul vowel yu-o
108 begintsuglyph("uniD7B8",184);
109 hangul.combine.tb(317,308)(whatever,vixf,vox);
110 tsu_render;
111 endtsuglyph;
112

```

U+D7B9
mande.uniD7B9

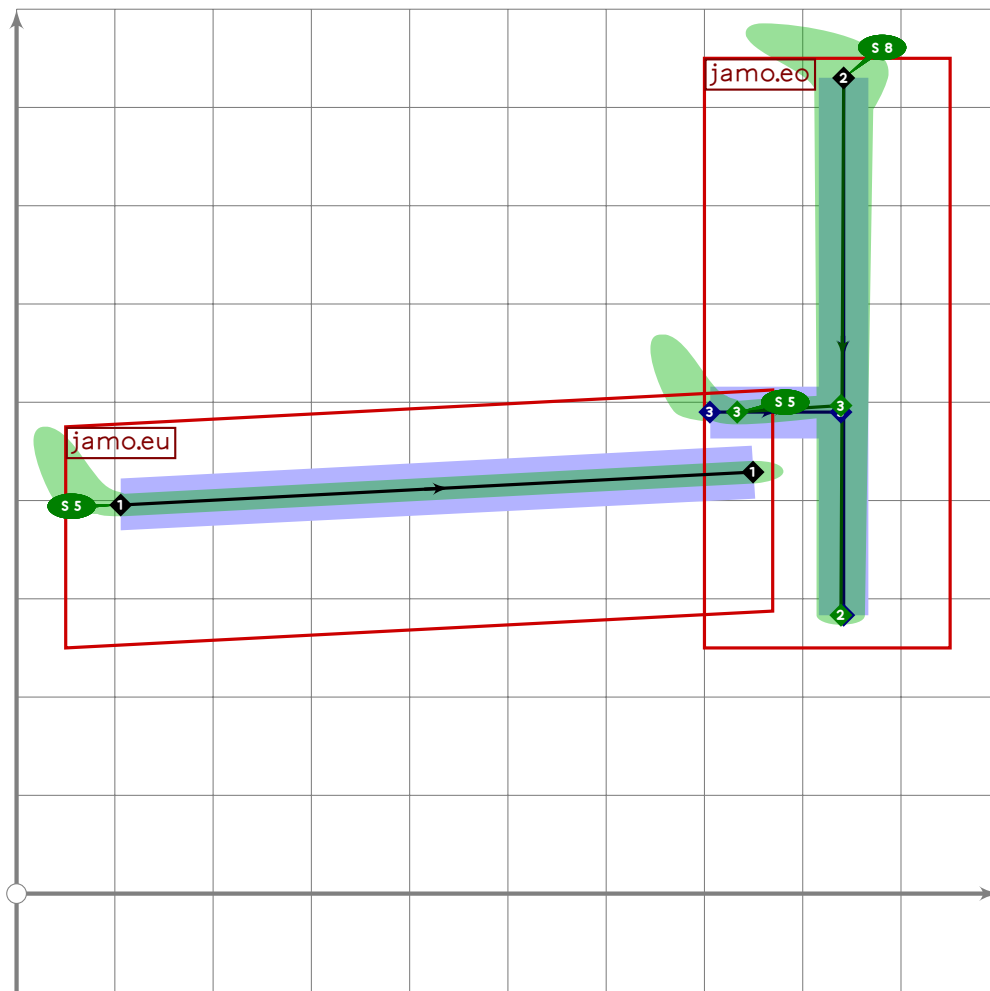
HGLE



```

113 % hangul vowel eu-a
114 begint Suglyph("uniD7B9",185);
115   hangul.combine.lr(318,300)(453,vixf,voxf);
116   tsu_render;
117 endtsuglyph;
118

```

HGLE

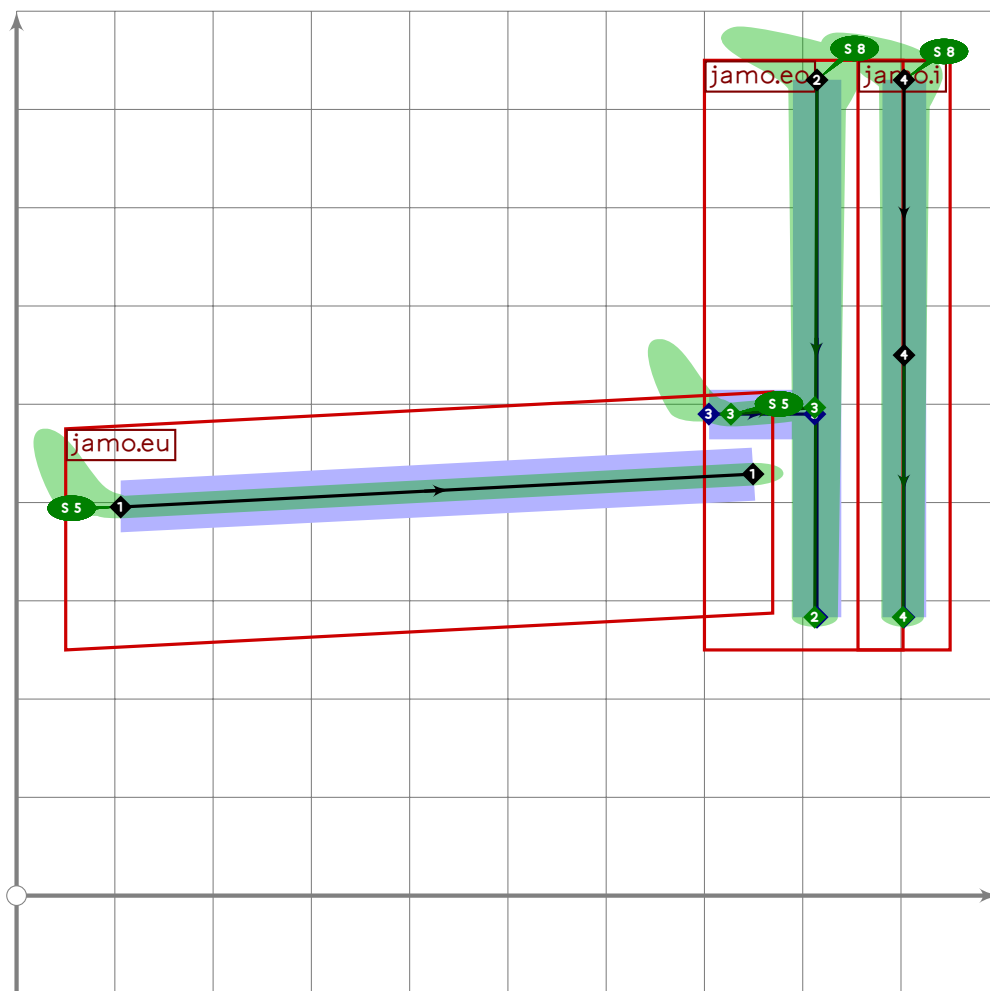
```

119 % hangul vowel eu-eo
120 begintsuglyph("uniD7BA",186);
121   hangul.combine.lr(318,304)(454,vixf,vox);
122   tsu_render;
123 endtsuglyph;
124

```

U+D7BB
mande.uniD7BB

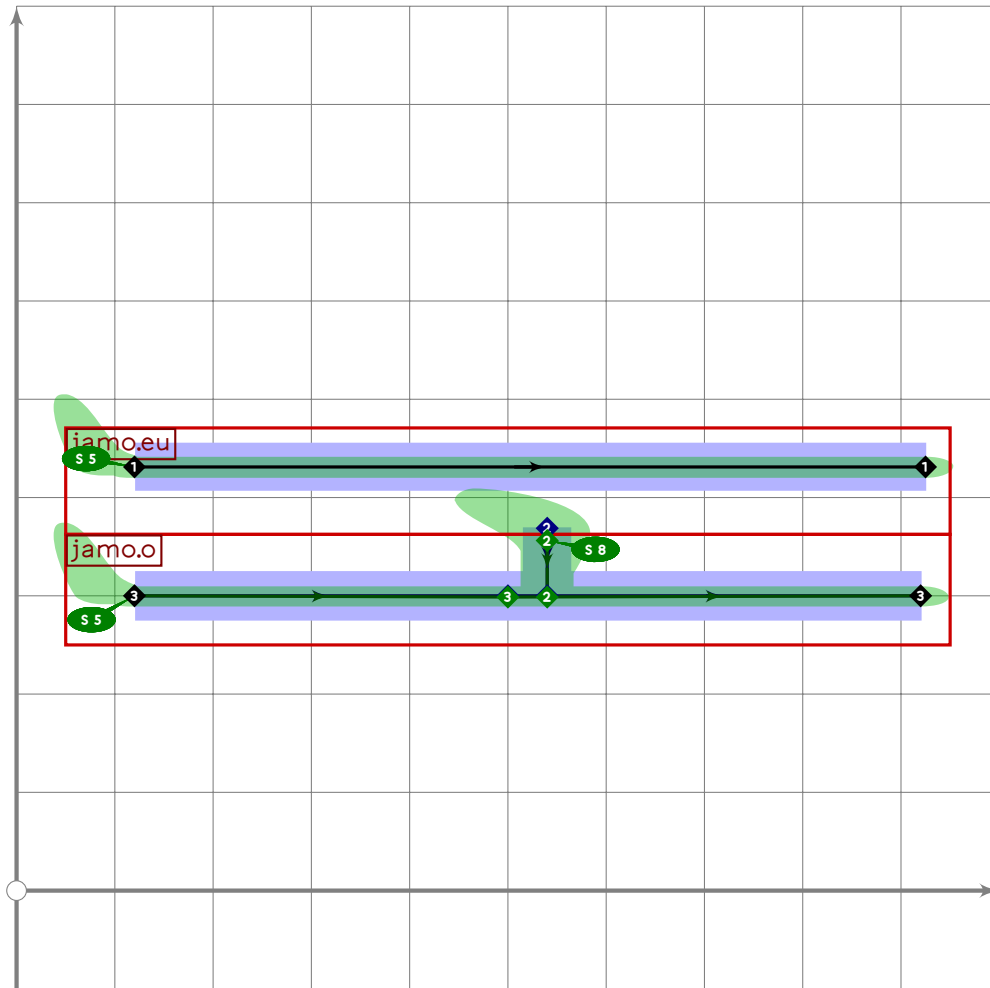
HGLE



```

125 % hangul vowel eu-e
126 begintsuglyph("uniD7BB",187);
127   hangul.combine.lr(318,305)(455,vixf,voxf);
128   tsu_render;
129 endtsuglyph;
130

```



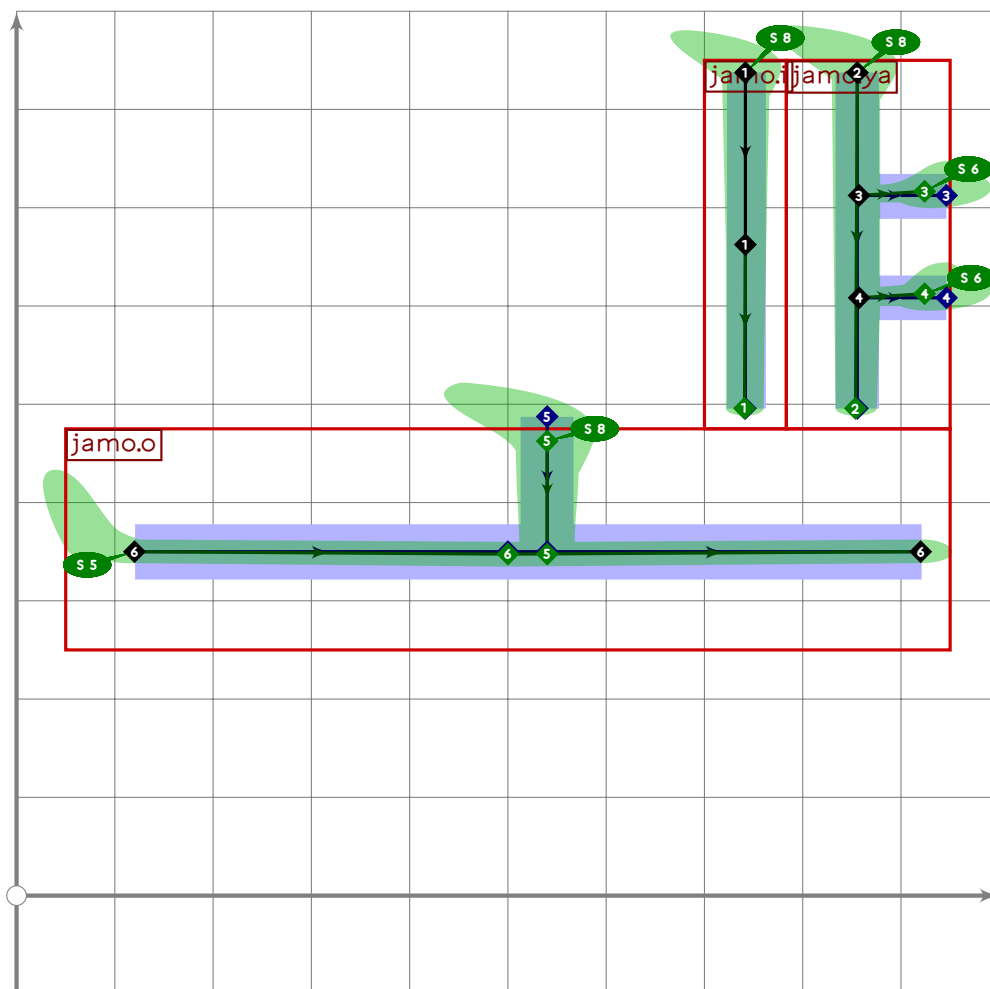
```

131 % hangul vowel eu-o
132 begint Suglyph("uniD7BC",188);
133   hangul.combine.tb(318,308)(whatever,vixf,vox);
134   tsu__render;
135 endts Suglyph;
136

```

U+D7BD
mande.uniD7BD

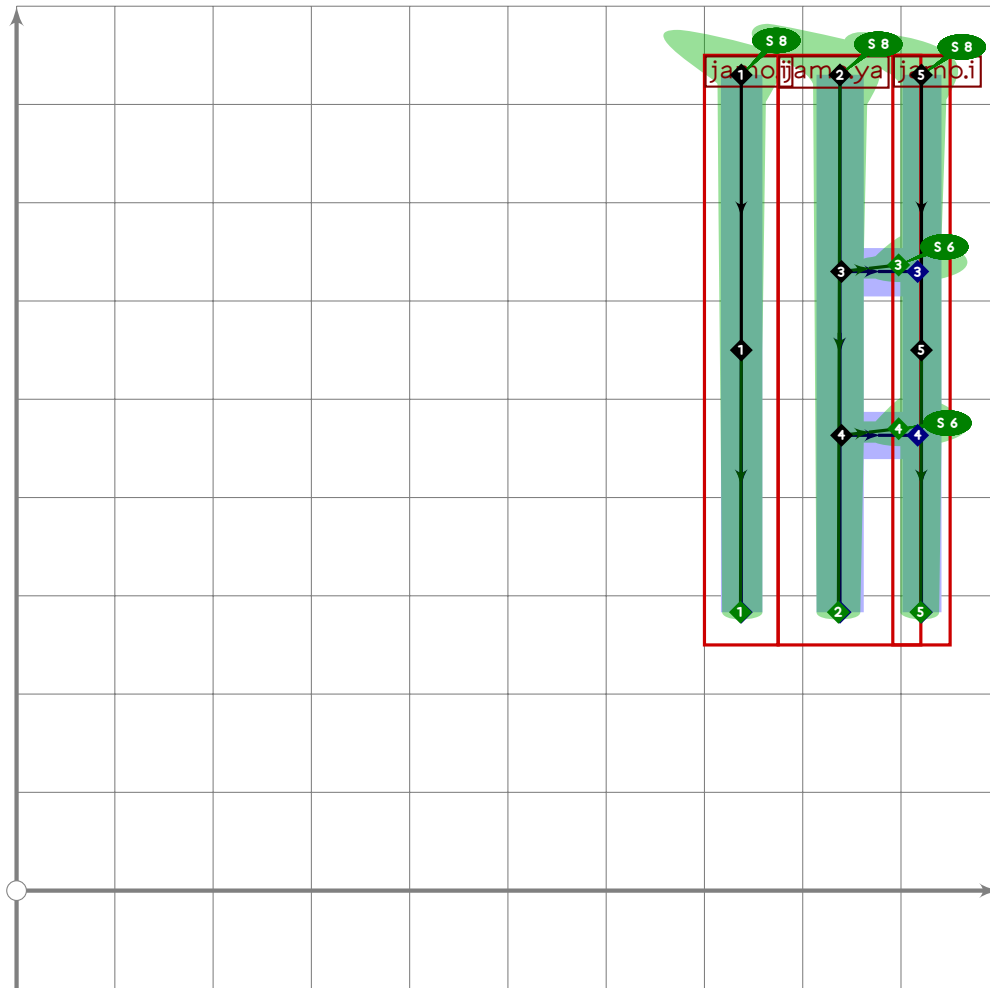
HGLE



```

137 % hangul vowel i-ya-o
138 begintsuglyph("uniD7BD";189);
139   hangul.combine.tb(467,308)(457,vixf,vox);
140   tsu_render;
141   endtsuglyph;
142

```



HGLE

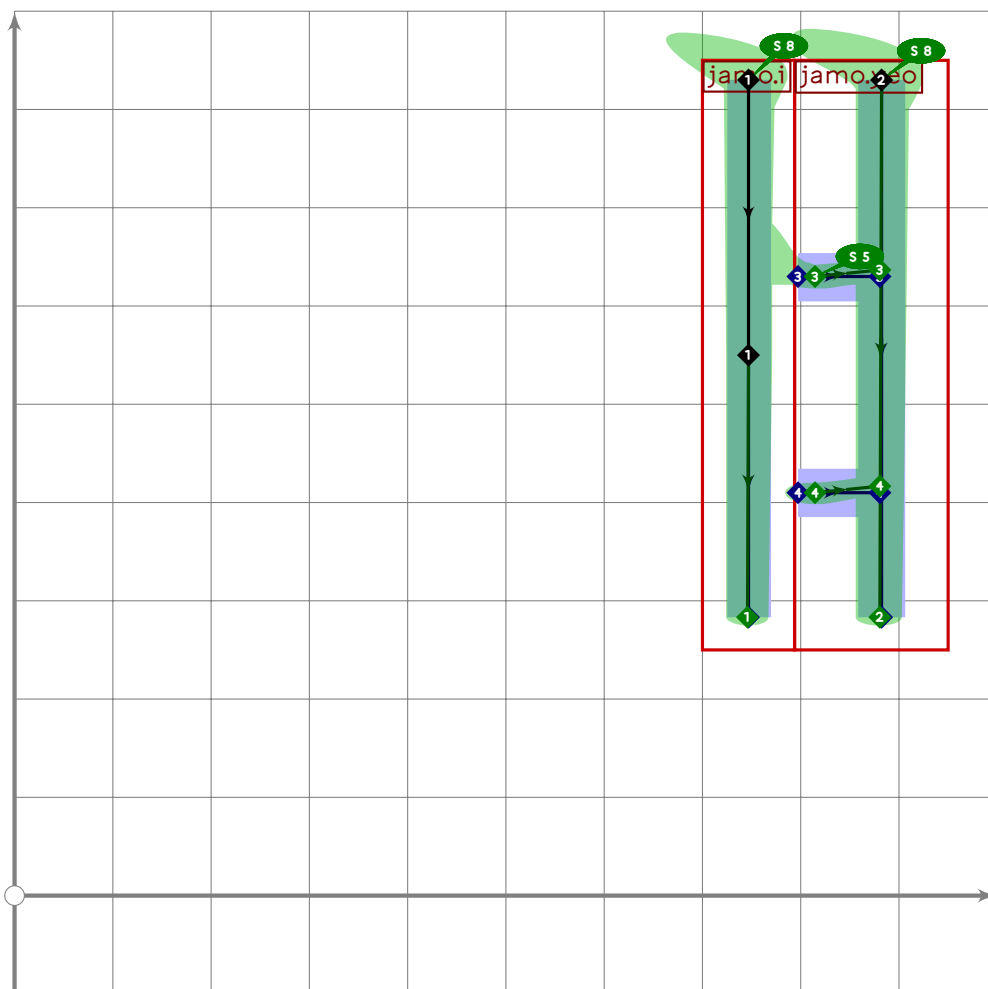
```

143 % hangul vowel i-yae
144 begintsuglyph("uniD7BE";190);
145   hangul.combine.lr(320,303)(458,vixf,voxf);
146   tsu_render;
147 endtsuglyph;
148

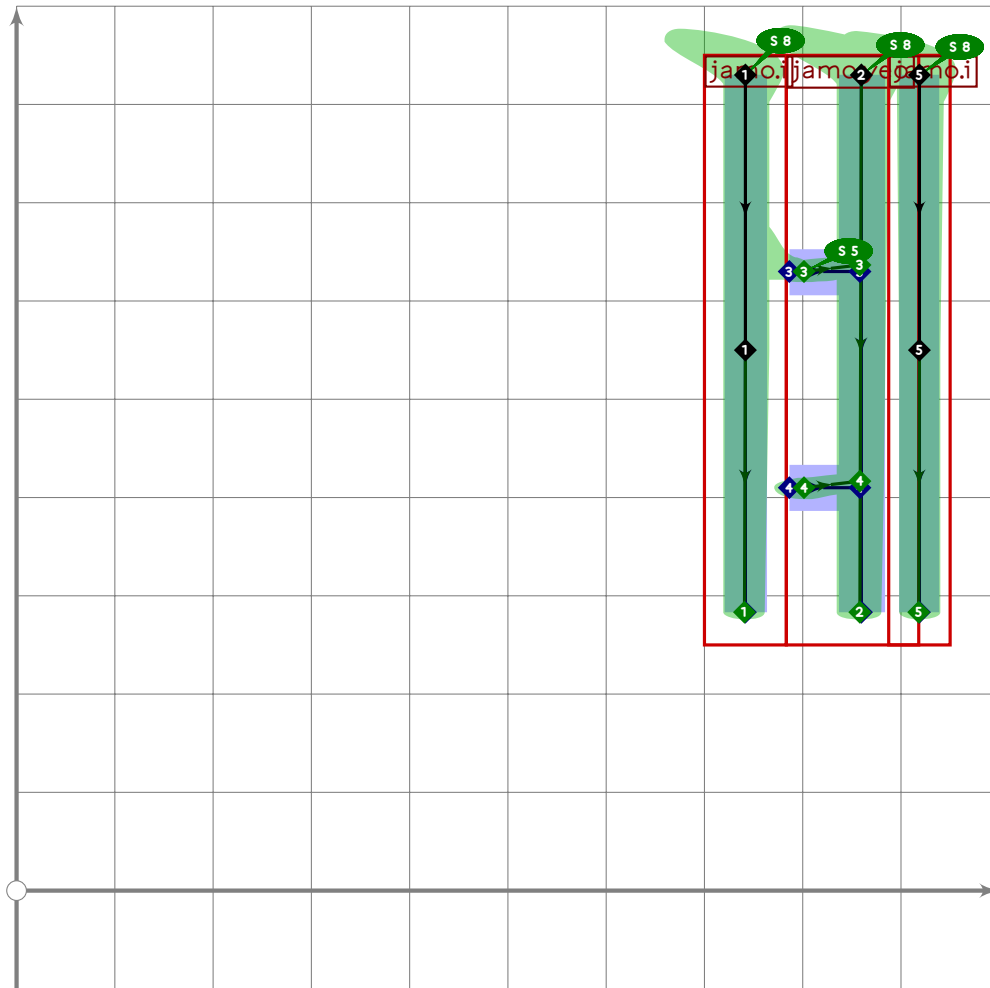
```

U+D7BF
mande.uniD7BF

HGLE



```
149 % hangul vowel i-yeo
150 begintsuglyph("uniD7BF";191);
151   hangul.combine.lr(320,306)(459,vixf,vox);
152   tsu_render;
153 endtsuglyph;
154
```



HGLE

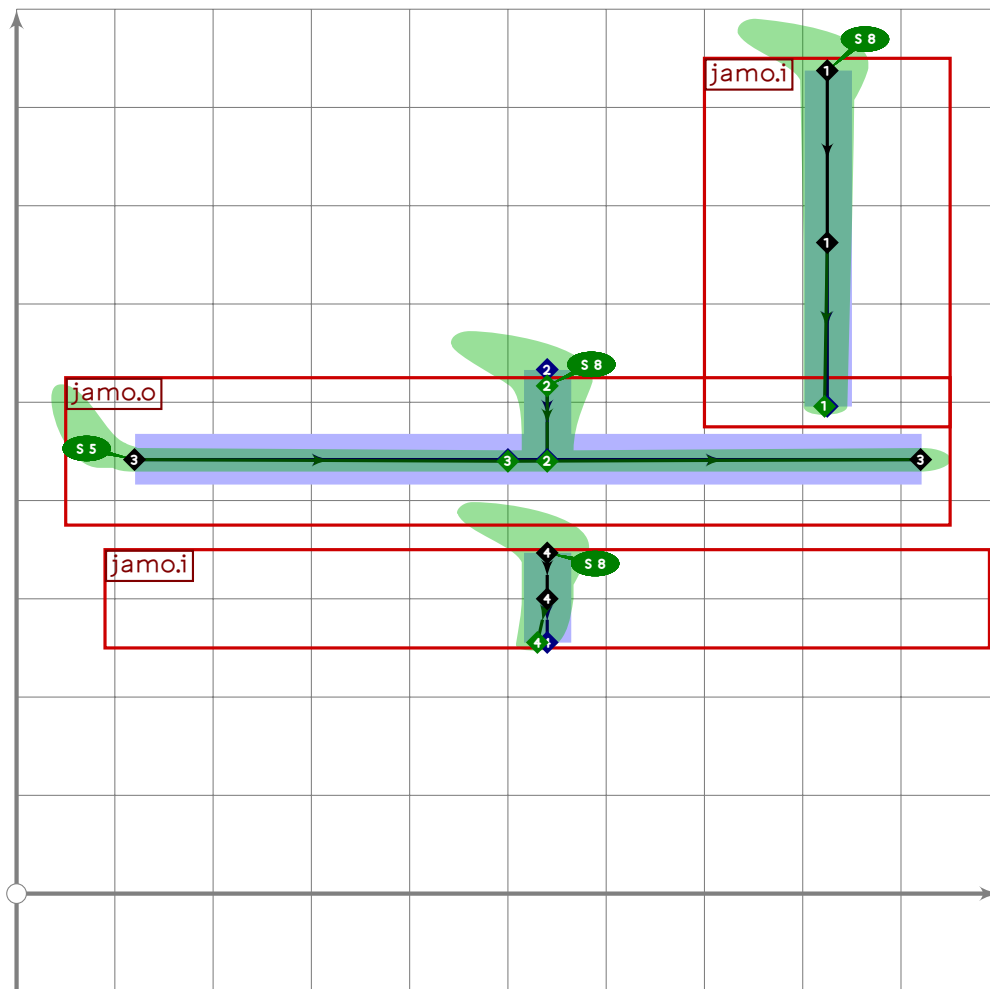
```

155 % hangul vowel i-ye
156 begint Suglyph("uniD7C0";192);
157   hangul.combine.lr(320,307)(460,vixf,vox);
158   tsu_render;
159 endtsuglyph;
160

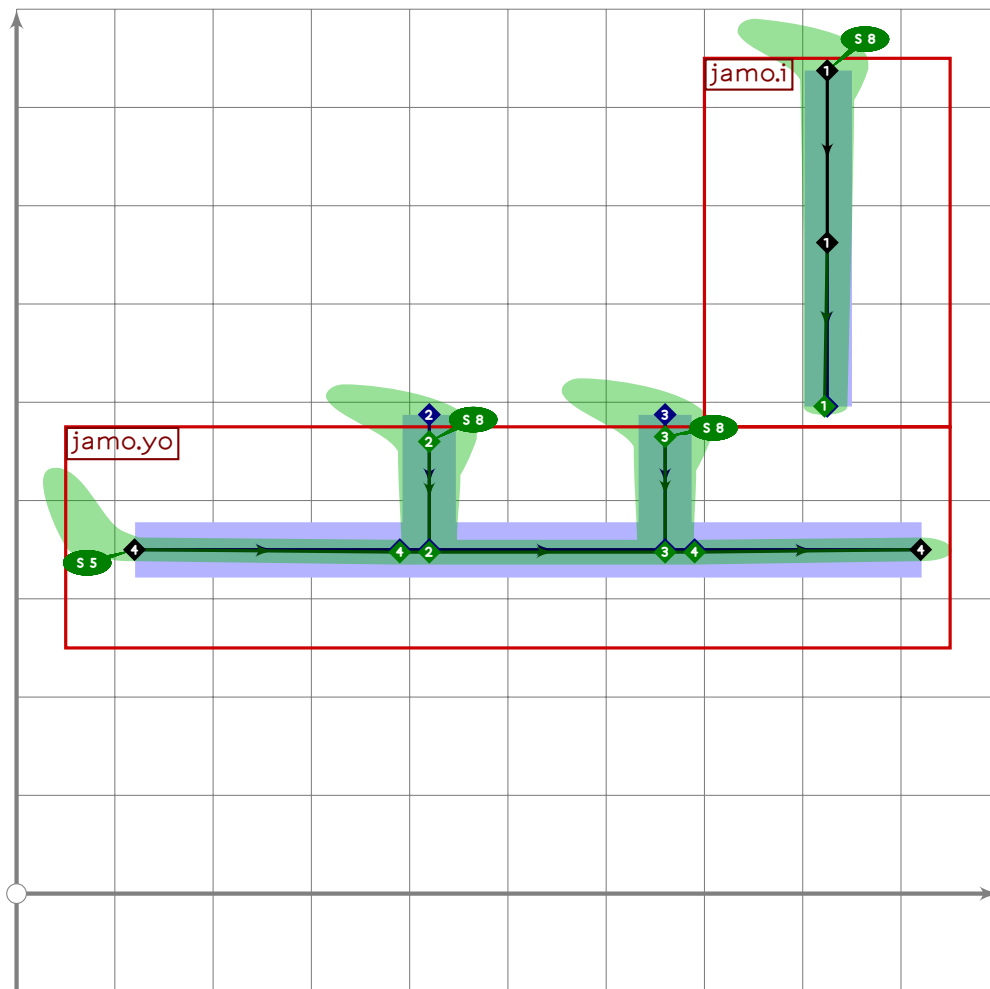
```

U+D7C1
mande.uniD7C1

HGLE



```
161 % hangul vowel i-o-i
162 begintsuglyph("uniD7C1",193);
163 hangul.combine.tb(320,468)(461,vixf,voxf);
164 tsu_render;
165 endtsuglyph;
166
```

HGLE

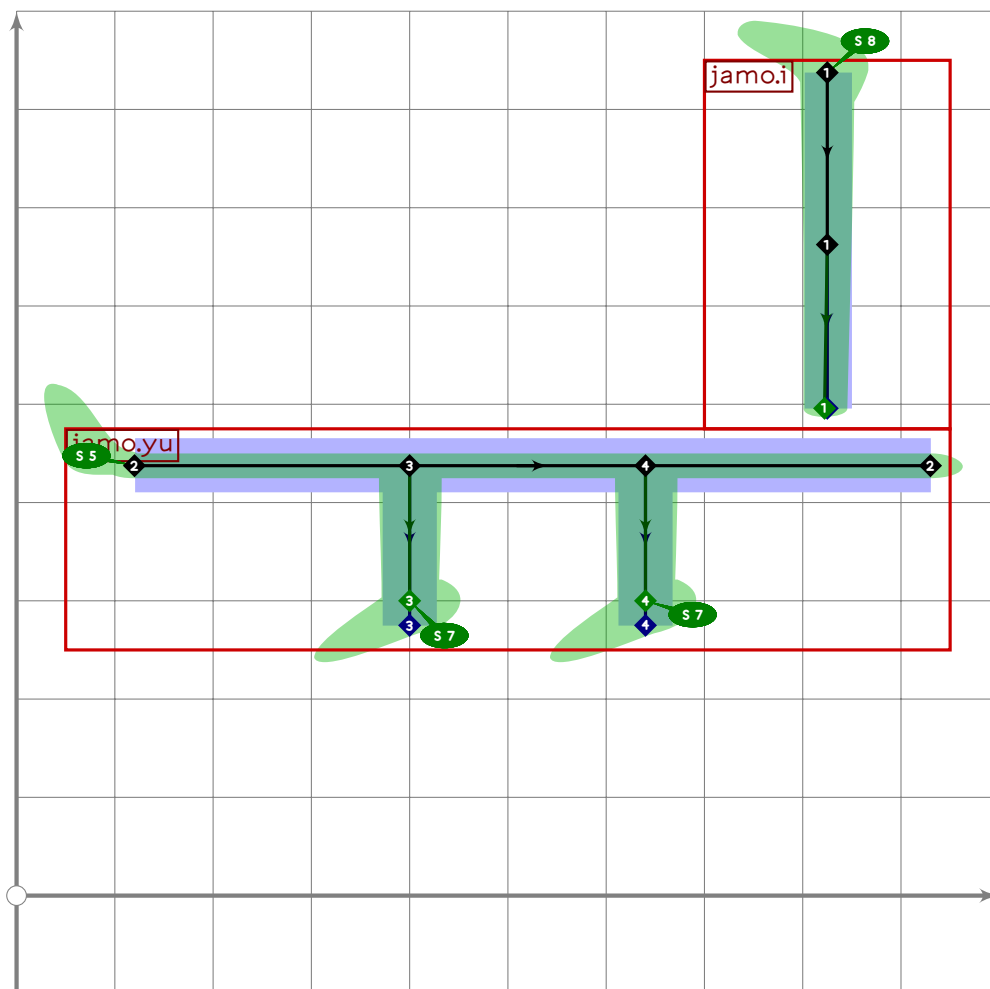
```

167 % hangul vowel i-yo
168 begintsuglyph("uniD7C2";194);
169 hangul.combine.tb(320,312)(462,vixf,voxf);
170 tsu_render;
171 endtsuglyph;
172

```

U+D7C3
mande.uniD7C3

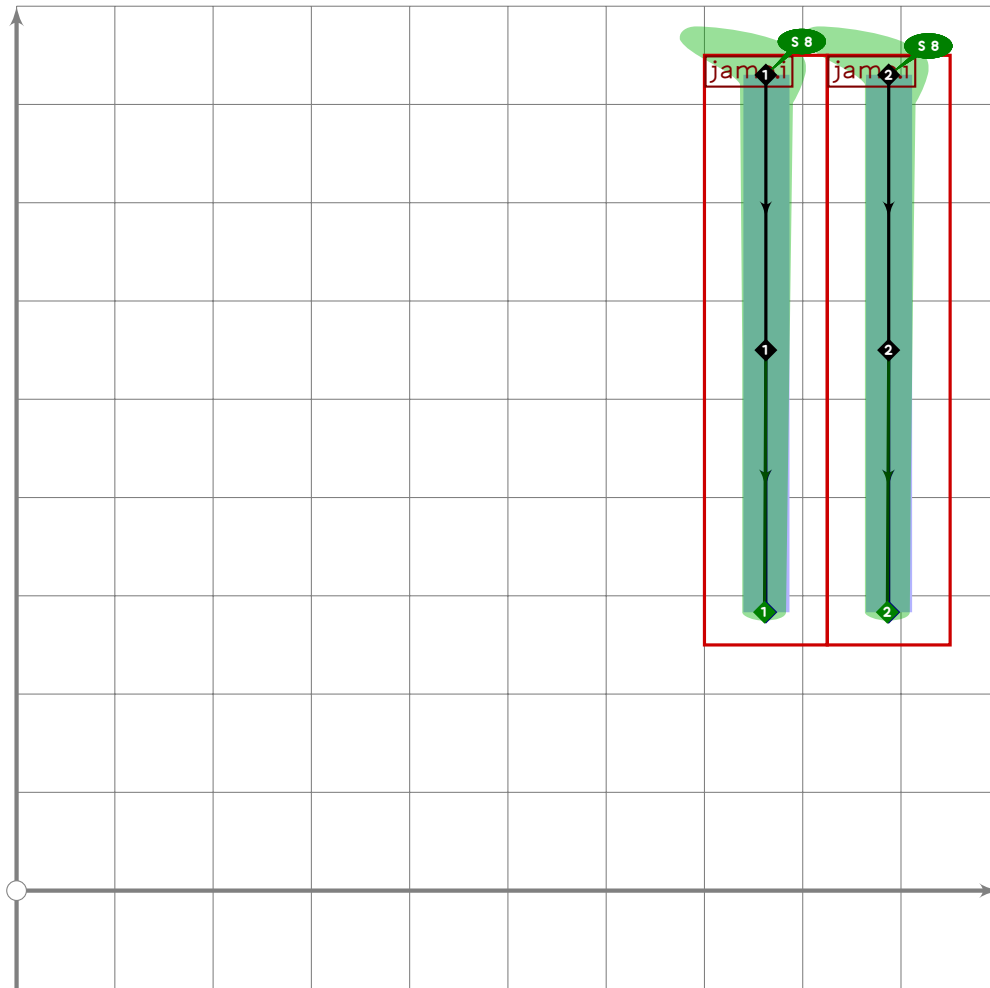
HGLE



```

173 % hangul vowel i-yu
174 begint Suglyph("uniD7C3";195);
175   hangul.combine.tb(320,317)(463,vixf,voxf);
176   tsu_render;
177 endtsuglyph;
178

```



HGLE

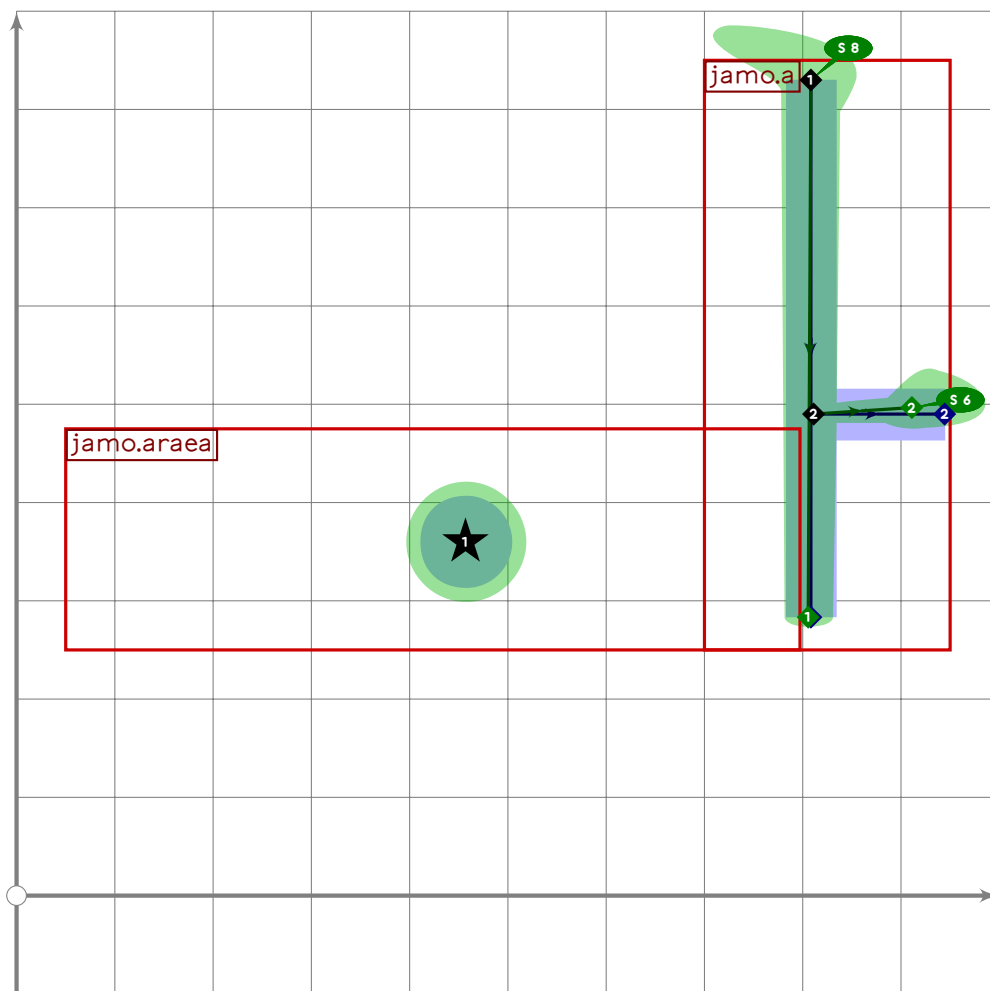
```

179 % hangul vowel i-i
180 begint Suglyph("uniD7C4";196);
181   hangul.combine.lr(320,320)(464,vixf,vox);
182   tsu_render;
183 endtsuglyph;
184

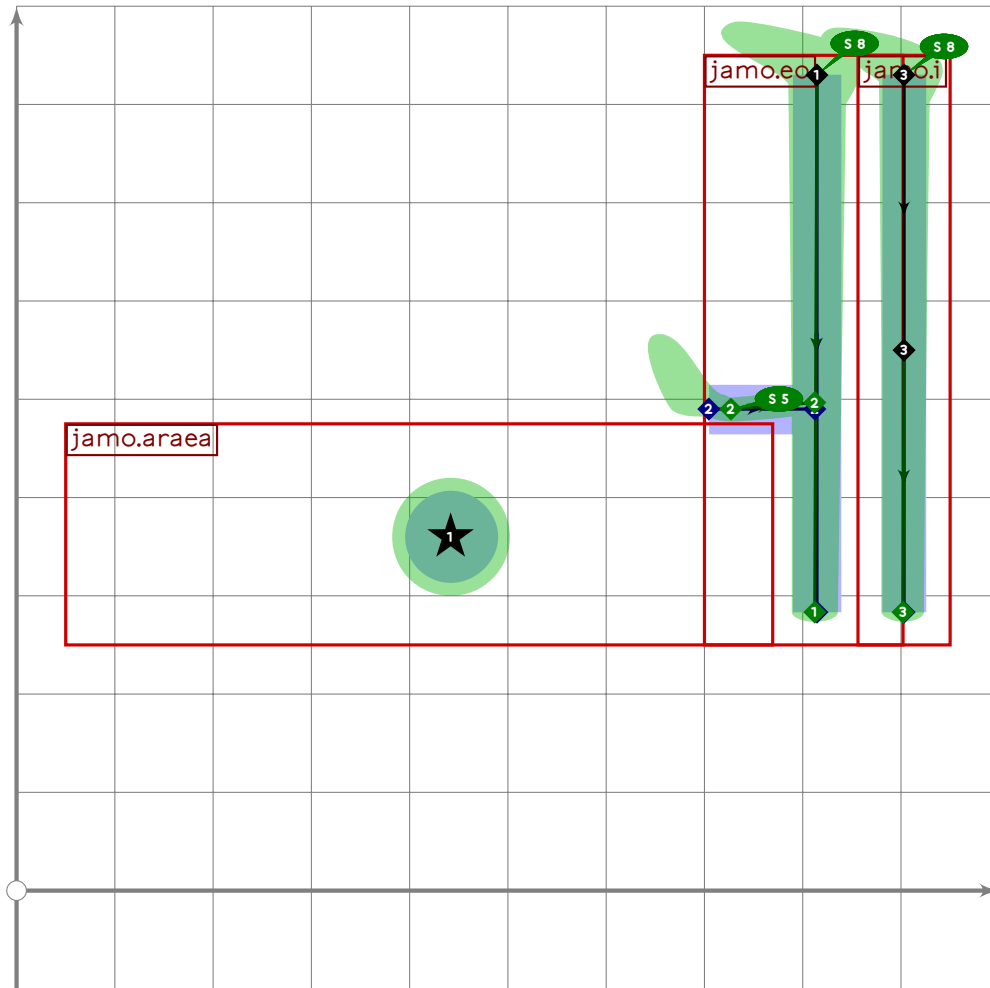
```

U+D7C5
mande.uniD7C5

HGLE



```
185 % hangul vowel araea-a
186 begint Suglyph("uniD7C5";197);
187   hangul.combine.lr(428,300)(465,vixf,voxf);
188   tsu_render;
189 endtsuglyph;
190
```



HGLE

```

191 % hangul vowel araea-e
192 begint Suglyph("uniD7C6",198);
193   hangul.combine.lr(428,305)(466,vixf,vox f);
194   tsu_render;
195 endtsuglyph;
196
197
198

```

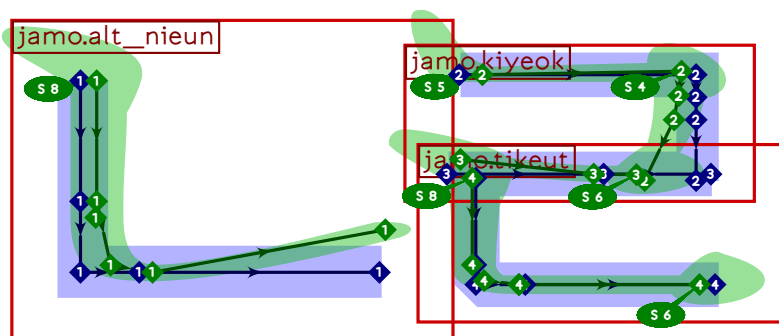
Hangul Jongseong (Tail) Jamo Extension B

```

199 % HANGUL JONGSEONG (TAIL) JAMO EXTENSION B
200
201 tsu_rescale_native_zero;
202

```

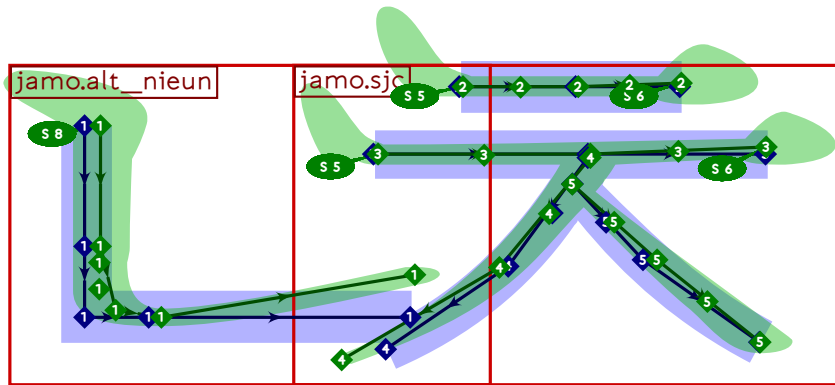
HGLE



```

203 % hangul tail nieun-rieul
204 begintsuglyph("uniD7CB";203);
205   hangul.combine.lr(604,508)(whatever,tixf,toxf);
206   tsu_render;
207 endtsuglyph;
208

```

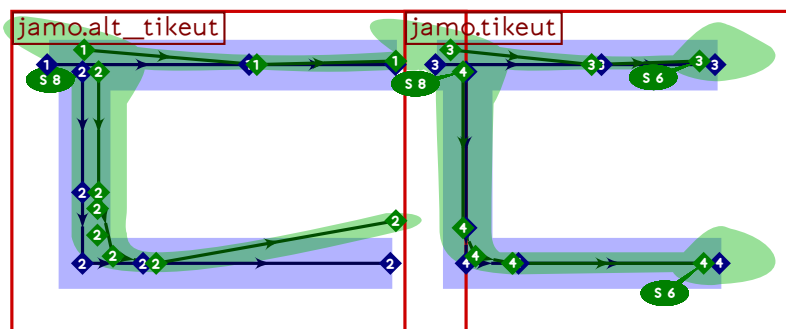


```

209 % hangul tail nieun-chieuch
210 begint Suglyph("uniD7CC";204);
211   hangul.combine.lr(604,523)(whatever,tixf,toxf);
212   tsu_render;
213 endtsuglyph;
214

```

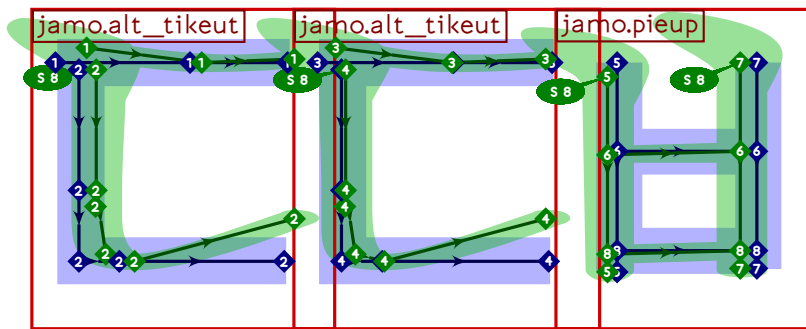
HGLE



```

215 % hangul tail ssangtikeut
216 begintsuglyph("uniD7CD";205);
217   hangul.combine.lr(607,507)(whatever,tixf,toxf);
218   tsu_render;
219 endtsuglyph;
220

```

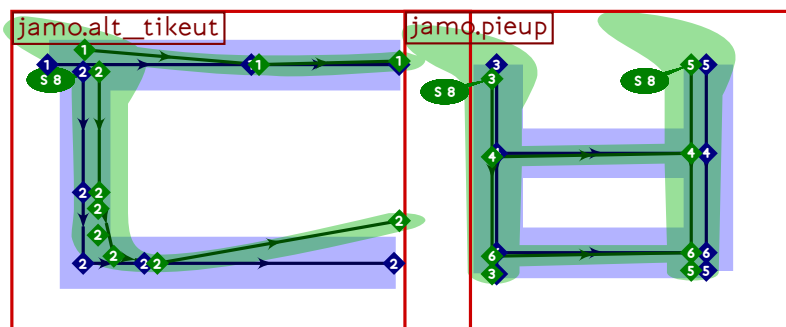



```

221 % hangul tail ssangtikeut-pieup
222 begintsuglyph("uniD7CE";206);
223   hangul.combine.lcr(607,607,517)(whatever,tixf,toxf);
224   tsu_render;
225 endtsuglyph;
226

```

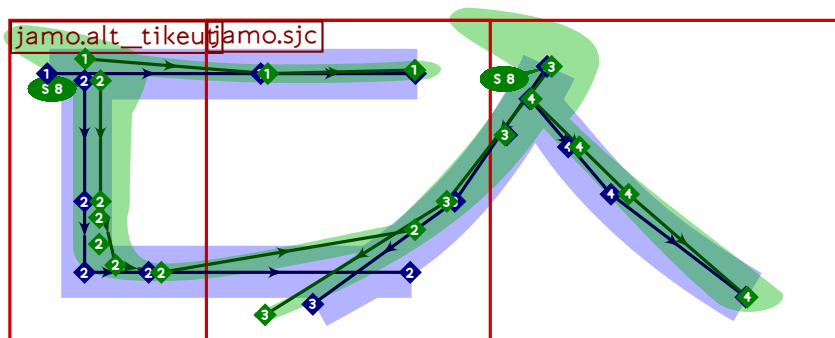
HGLE



```

227 % hangul tail tikeut-pieup
228 begintsuglyph("uniD7CF";207);
229   hangul.combine.lr(607,517)(whatever,tixf,toxf);
230   tsu_render;
231 endtsuglyph;
232

```



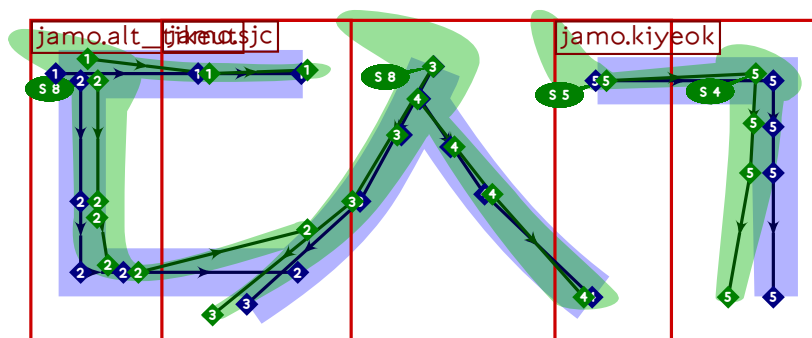
```

233 % hangul tail tikeut-sios
234 begint Suglyph("uniD7D0";208);
235   hangul.combine.lr(607,519)(whatever,tixf,toxf);
236   tsu_render;
237 endtsuglyph;
238

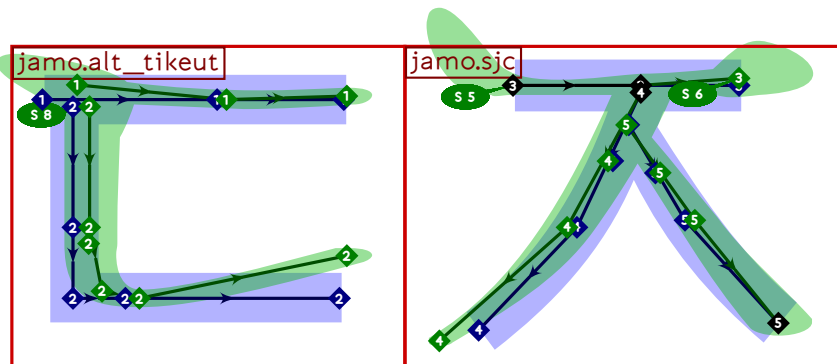
```

U+D7D1
mande.uniD7D1

HGLE



```
239 % hangul tail tikeut-sios-kiyeok
240 beginsuglyph("uniD7D1",209);
241 hangul.combine.lcr(607,519,501)(whatever,tixf,toxf);
242 tsu_render;
243 endtsuglyph;
244
```

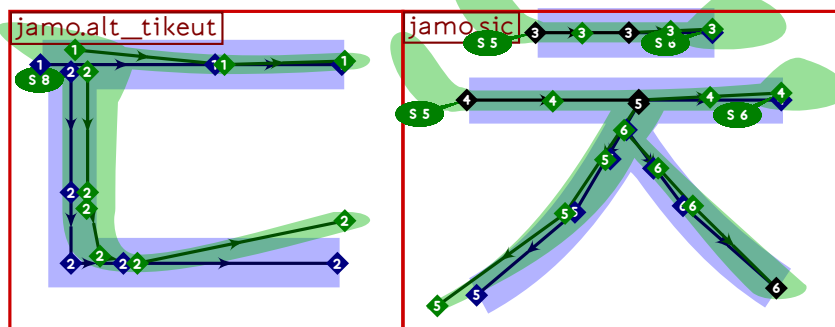


```

245 % hangul tail tikeut-cieuc
246 begintsuglyph("uniD7D2";210);
247   hangul.combine.lcr(607,500,522)(whatever,tixf,toxf);
248   tsu_render;
249 endtsuglyph;
250

```

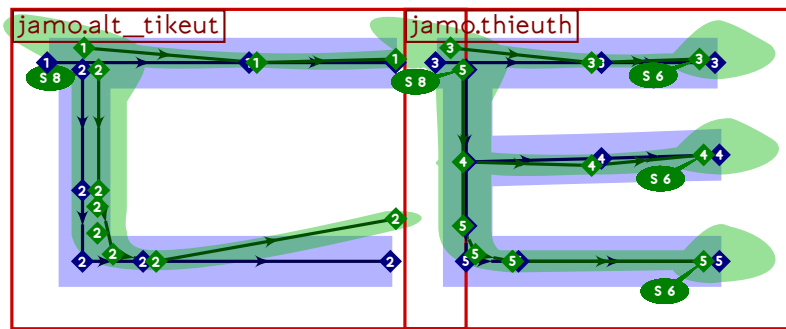
HGLE



```

251 % hangul tail tikeut-chieuch
252 begint Suglyph("uniD7D3";211);
253   hangul.combine.lcr(607,500,523)(whatever,tixf,toxf);
254   tsu_render;
255 endtsuglyph;
256

```

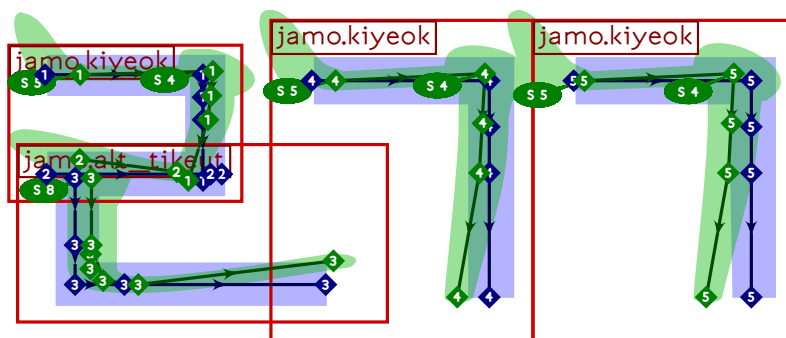


```

257 % hangul tail tikeut-thieuth
258 begint Suglyph("uniD7D4";212);
259   hangul.combine.lr(607,525)(whatever,tixf,toxf);
260   tsu_render;
261 endtsuglyph;
262

```

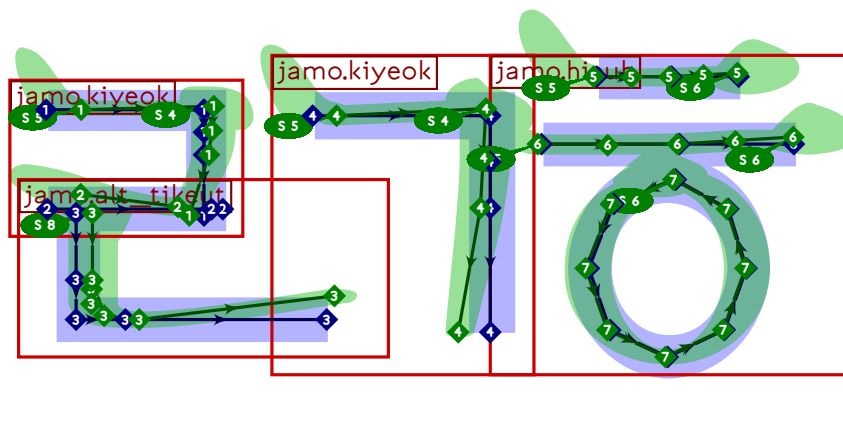
HGLE



```

263 % hangul tail rieul-ssangkiyeok
264 begint Suglyph("uniD7D5";213);
265   hangul.combine.lcr(608,501,501)(whatever,tixf,toxf);
266   tsu_render;
267 endtsuglyph;
268

```

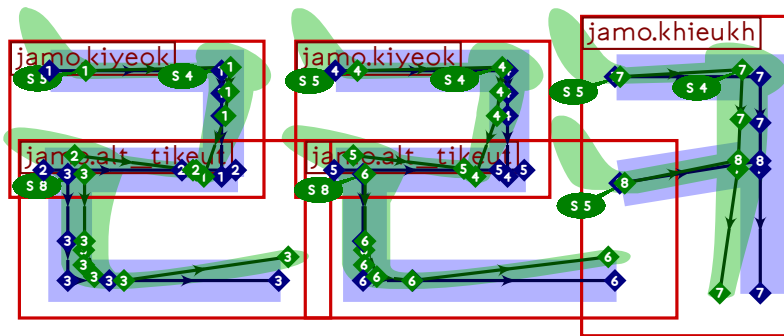



```

269 % hangul tail rieul-kiyeok-hieuh
270 begintuglyph("uniD7D6";214);
271   hangul.combine.lcr(608,501,527)(whatever,tixf,toxf);
272   tsu_render;
273 endtuglyph;
274

```

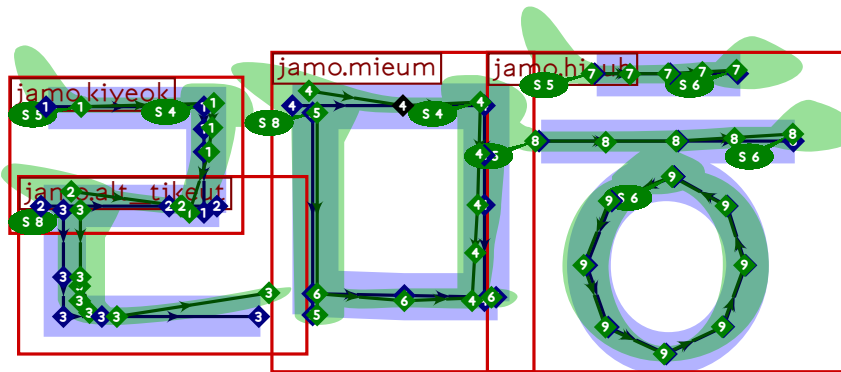
HGLE



```

275 % hangul tail ssangrieul-khieukh
276 begintsuglyph("uniD7D7";215);
277   hangul.combine.lcr(608,608,524)(whatever,tixf,toxf);
278   tsu_render;
279 endtsuglyph;
280

```

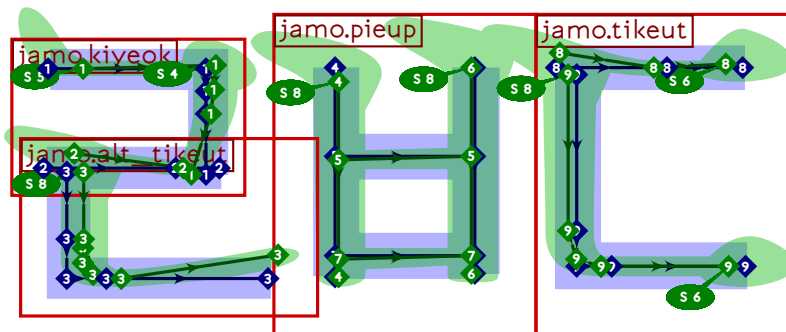


```

281 % hangul tail rieul-mieum-hieuh
282 begintsuglyph("uniD7D8";216);
283   hangul.combine.lcr(608,516,527)(whatever,tixf,toxf);
284   tsu_render;
285 endtsuglyph;
286

```

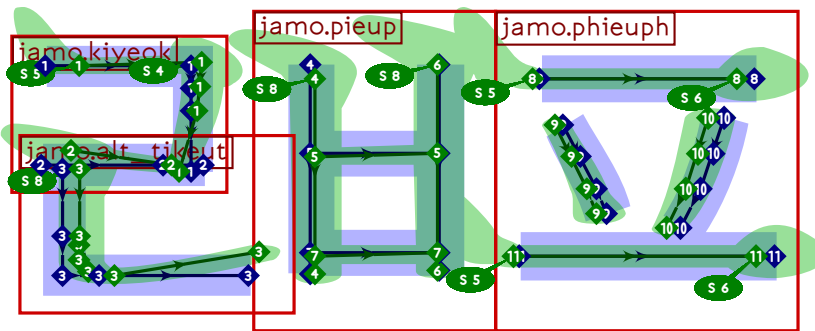
HGLE



```

287 % hangul tail rieul-pieup-tikeut
288 begintsuglyph("uniD7D9";217);
289   hangul.combine.lcr(608,517,507)(whatever,tixf,toxf);
290   tsu_render;
291 endtsuglyph;
292

```

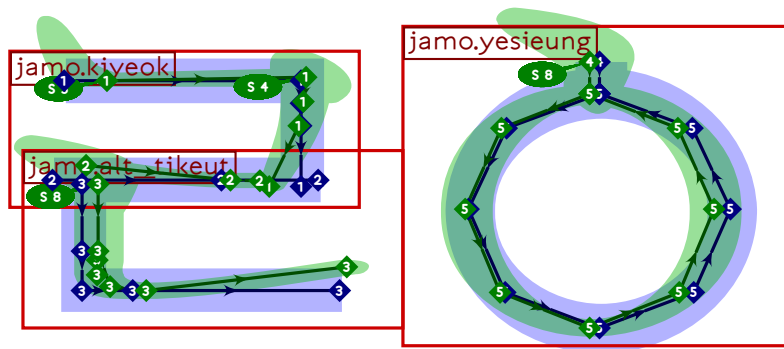


```

293 % hangul tail rieul-pieup-phieuph
294 begintsuglyph("uniD7DA";218);
295   hangul.combine.lcr(608,517,526)(whatever,tixf,toxf);
296   tsu_render;
297 endtsuglyph;
298

```

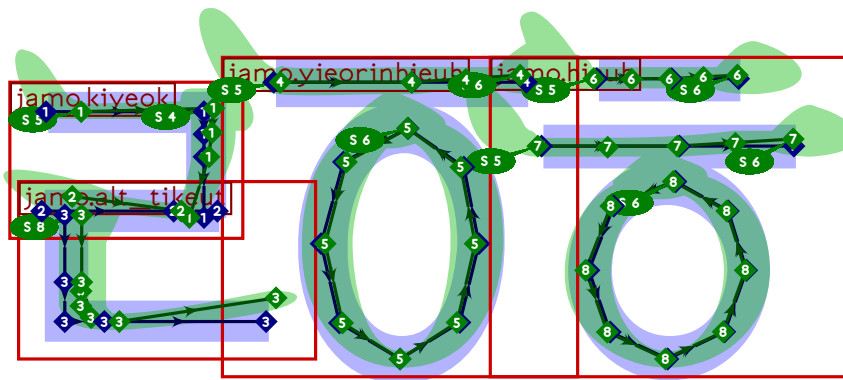
HGLE



```

299 % hangul tail rieul-yesieung
300 begintsuglyph("uniD7DB";219);
301   hangul.combine.lr(608,629)(whatever,tixf,toxf);
302   tsu_render;
303 endsuglyph;
304

```

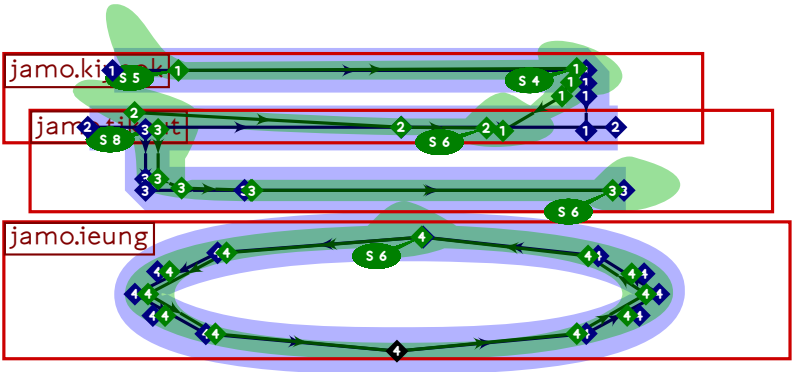


```

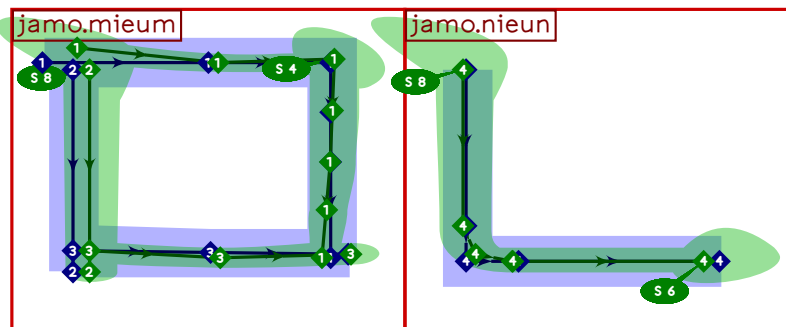
305 % hangul tail rieul-yeorinhieuh-hieuh
306 begintsuglyph("uniD7DC",220);
307   hangul.combine.lcr(608,631,527)(whatever,tixf,toxf);
308   tsu_render;
309 endtsuglyph;
310

```

HGLE



```
311 % hangul tail kapyeounrieul
312 beginsuglyph("uniD7DD",221);
313 hangul.combine.tb(508,521)(whatever,tixf,toxf);
314 tsu_render;
315 endtsuglyph;
316
```

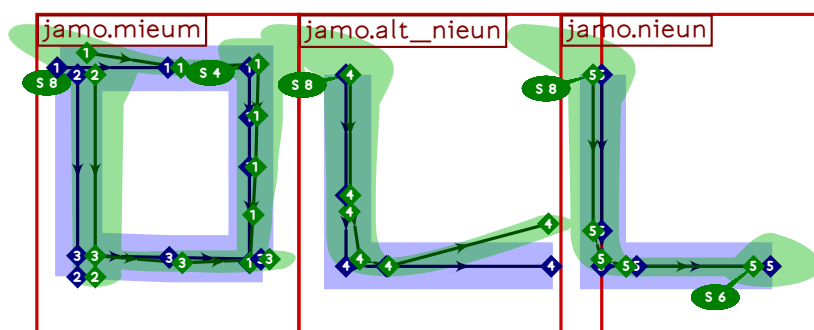



```

317 % hangul tail mieum-nieun
318 begint Suglyph("uniD7DE";222);
319   hangul.combine.lr(516,504)(whatever,tixf,toxf);
320   tsu_render;
321 endtsuglyph;
322

```

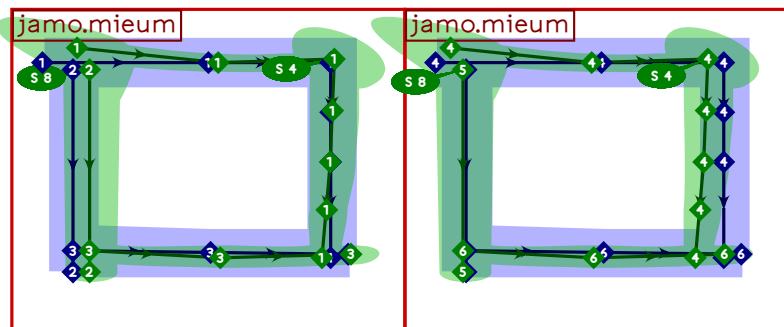
HGLE



```

323 % hangul tail mieum-ssangnieun
324 beginsuglyph("uniD7DF";223);
325   hangul.combine.lcr(516,604,504)(whatever,tixf,toxf);
326   tsu_render;
327 endtsuglyph;
328

```



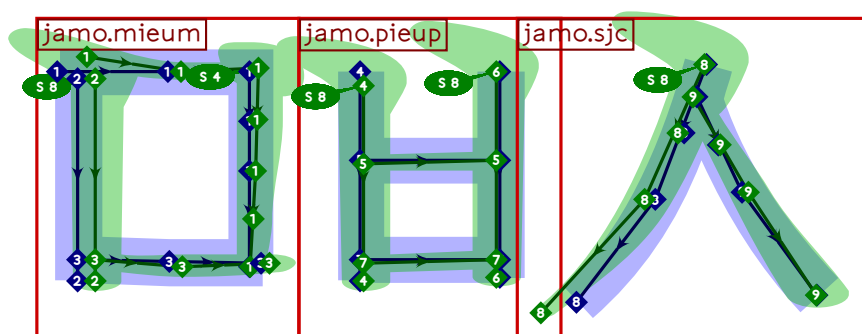
```

329 % hangul tail ssangmieum
330 begint Suglyph("uniD7E0";224);
331   hangul.combine.lr(516,516)(whatever,tixf,toxf);
332   tsu_render;
333 endtsuglyph;
334

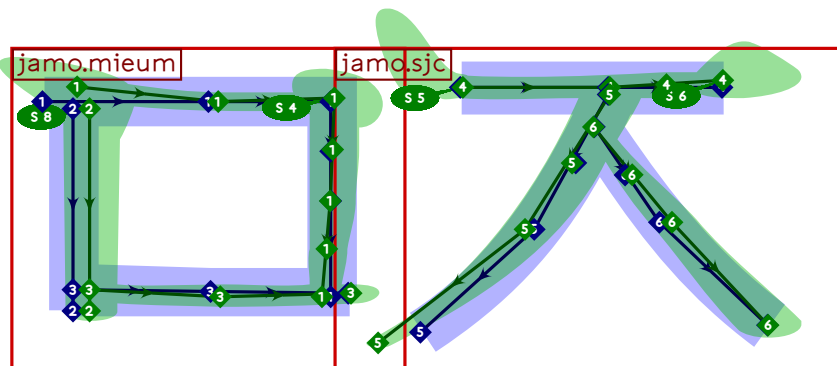
```

U+D7E1
mande.uniD7E1

HGLE



```
335 % hangul tail mieum-pieup-sios
336 begintsuglyph("uniD7E1",225);
337 hangul.combine.lcr(516,517,519)(whatever,tixf,toxf);
338 tsu_render;
339 endtsuglyph;
340
```

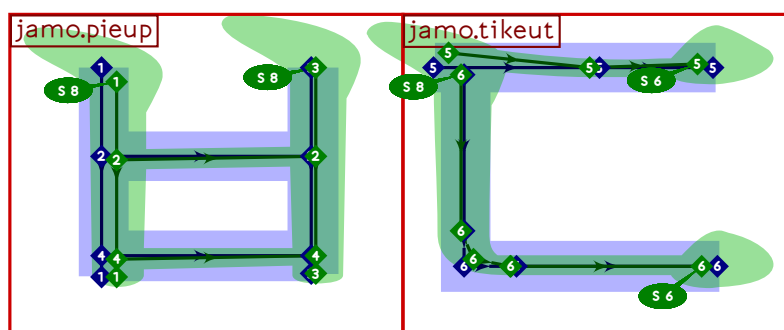


```

341 % hangul tail mieum-cieuc
342 begintsuglyph("uniD7E2";226);
343   hangul.combine.lr(516,522)(whatever,tixf,toxf);
344   tsu_render;
345 endtsuglyph;
346

```

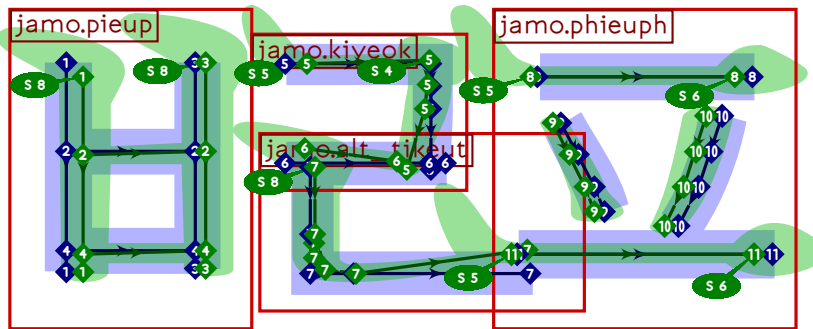
HGLE



```

347 % hangul tail pieup-tikeut
348 begintsuglyph("uniD7E3",227);
349   hangul.combine.lr(517,507)(whatever,tixf,toxf);
350   tsu_render;
351 endtsuglyph;
352

```



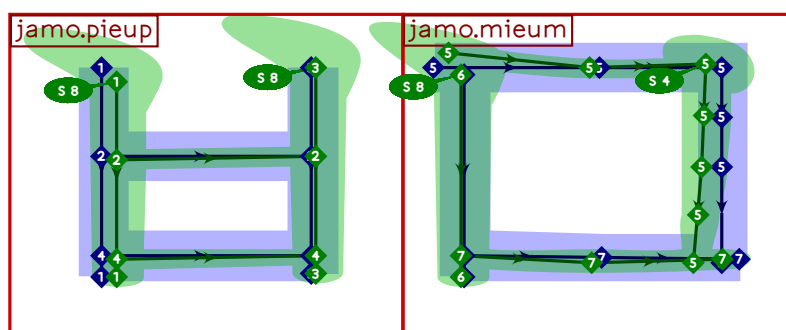
```

353 % hangul tail pieup-rieul-phieuph
354 begintsuglyph("uniD7E4",228);
355   hangul.combine.lcr(517,608,526)(whatever,tixf,toxf);
356   tsu_render;
357 endtsuglyph;
358

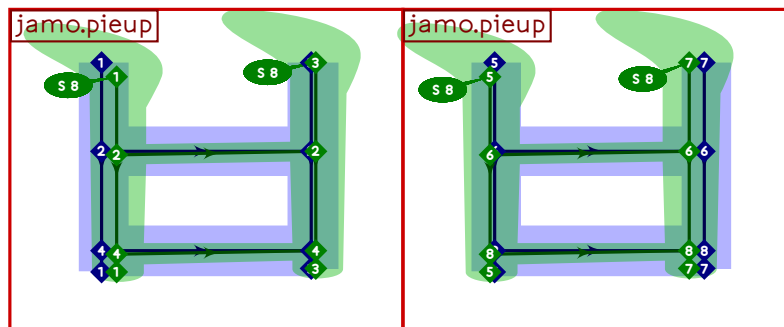
```

U+D7E5
mande.uniD7E5

HGLE



```
359 % hangul tail pieup-mieum
360 begintsuglyph("uniD7E5",229);
361   hangul.combine.lr(517,516)(whatever,tixf,toxf);
362   tsu_render;
363 endsuglyph;
364
```

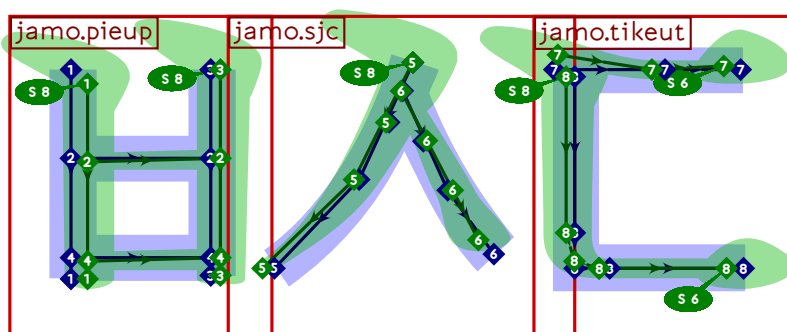



```

365 % hangul tail ssangpieup
366 begintsuglyph("uniD7E6",230);
367   hangul.combine.lr(517,517)(whatever,tixf,toxf);
368   tsu_render;
369 endtsuglyph;
370

```

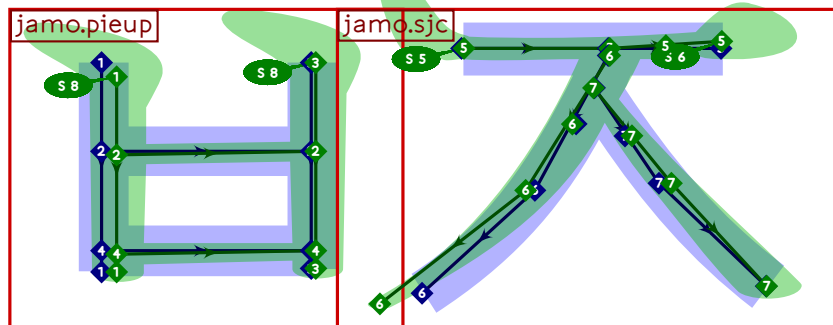
HGLE



```

371 % hangul tail pieup-sios-tikeut
372 begintsuglyph("uniD7E7";231);
373   hangul.combine.lcr(517,619,507)(whatever,tixf,toxf);
374   tsu_render;
375 endtsuglyph;
376

```



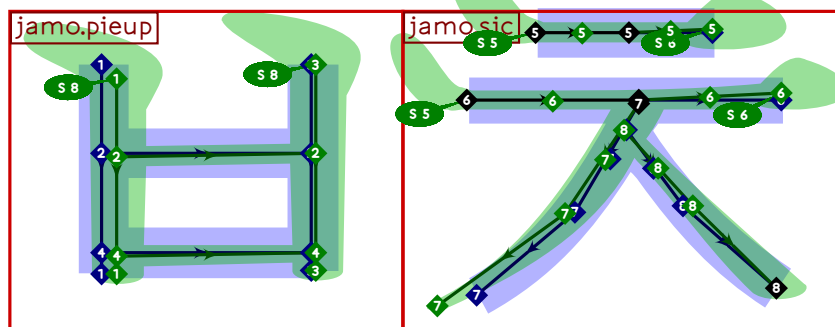
```

377 % hangul tail pieup-cieuc
378 begint Suglyph("uniD7E8",232);
379   hangul.combine.lr(517,522)(whatever,tixf,toxf);
380   tsu_render;
381 endtsuglyph;
382

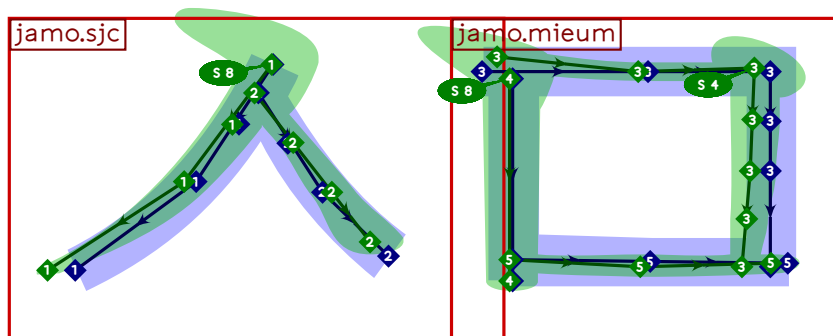
```

U+D7E9
mande.uniD7E9

HGLE



```
383 % hangul tail pieup-chieuch
384 begint Suglyph("uniD7E9",233);
385   hangul.combine.lcr(517,500,523)(whatever,tixf,toxf);
386   tsu_render;
387 endtsuglyph;
388
```

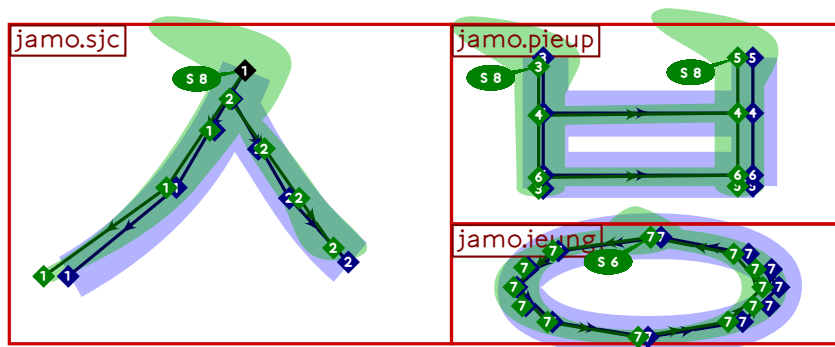


```

389 % hangul tail sios-mieum
390 begint Suglyph("uniD7EA";234);
391   hangul.combine.lr(619,516)(whatever,tixf,toxf);
392   tsu_render;
393 endtsuglyph;
394

```

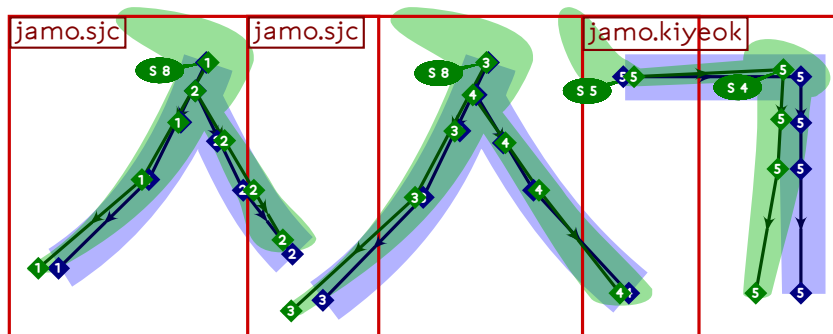
HGLE



```

395 % hangul tail sios-kapyeounpieup
396 begint Suglyph("uniD7EB",235);
397   hangul.combine.lr(619,630)(whatever,tixf,toxf);
398   tsu_render;
399 endtsuglyph;
400

```

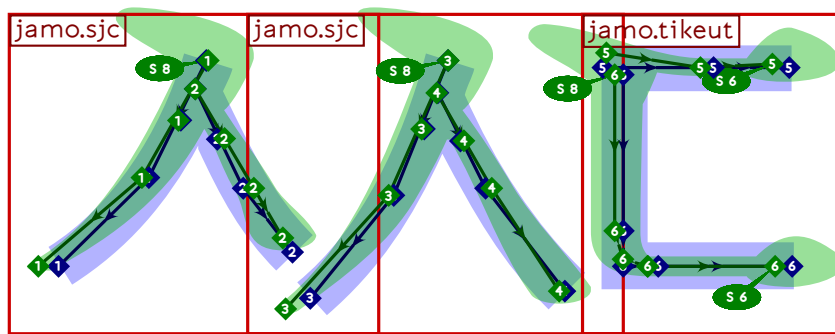


```

401 % hangul tail ssangsios-kiyeok
402 begintsuglyph("uniD7EC";236);
403   hangul.combine.lcr(619,519,501)(whatever,tixf,toxf);
404   tsu_render;
405 endtsuglyph;
406

```

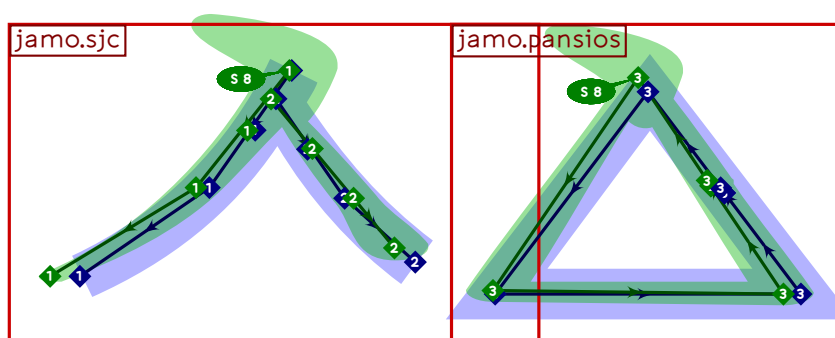
HGLE



```

407 % hangul tail ssangsios-tikeut
408 begintsuglyph("uniD7ED";237);
409 hangul.combine.lcr(619,519,507)(whatever,tixf,toxf);
410 tsu_render;
411 endtsuglyph;
412

```

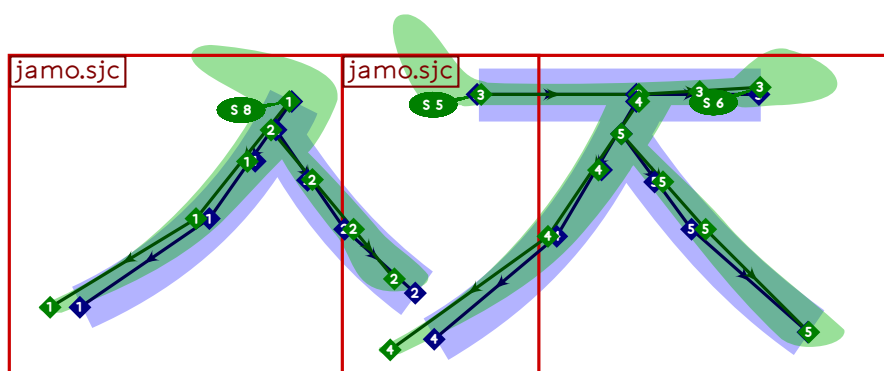



```

413 % hangul tail sios-pansios
414 begintsuglyph("uniD7EE";238);
415   hangul.combine.lr(619,628)(whatever,tixf,toxf);
416   tsu_render;
417 endtsuglyph;
418

```

HGLE

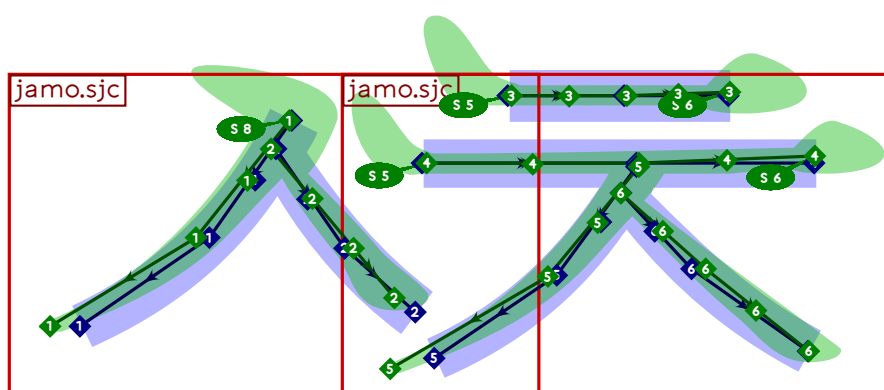


```

419 % hangul tail sios-cieuc
420 begint Suglyph("uniD7EF";239);
421   hangul.combine.lr(619,522)(whatever,tixf,toxf);
422   tsu_render;
423 endtsuglyph;
424

```

HGLE

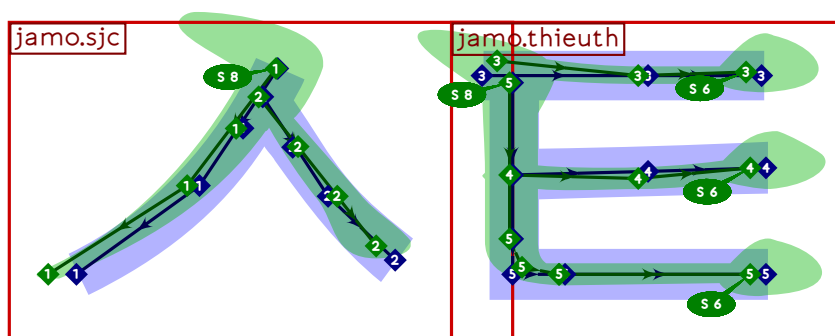


```

425 % hangul tail sios-chieuch
426 begint Suglyph("uniD7F0",240);
427   hangul.combine.lr(619,523)(whatever,tixf,toxf);
428   tsu_render;
429 endtsuglyph;
430

```

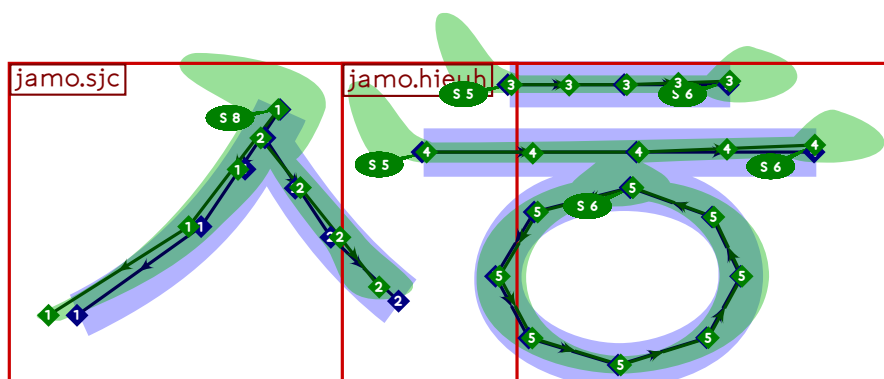
HGLE



```

431 % hangul tail sios-thieuth
432 begintuglyph("uniD7F1",241);
433   hangul.combine.lr(619,525)(whatever,tixf,toxf);
434   tsu_render;
435 endtsuglyph;
436

```

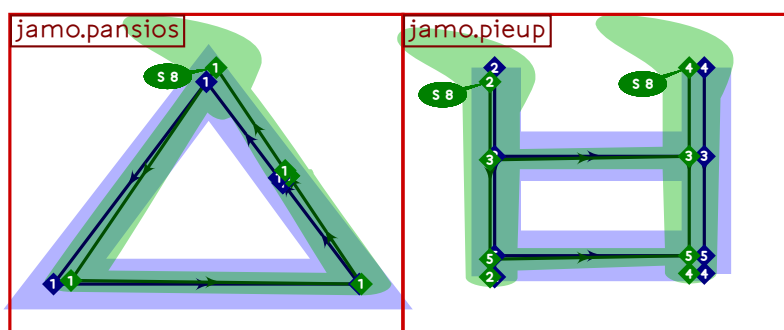


```

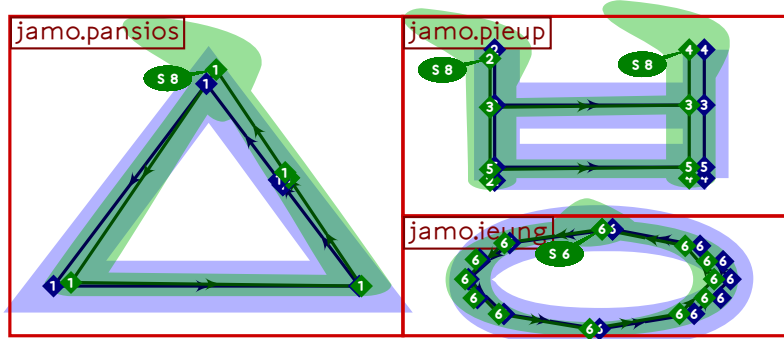
437 % hangul tail sios-hieuh
438 begintuglyph("uniD7F2";242);
439   hangul.combine.lr(619,527)(whatever,tixf,toxf);
440   tsu_render;
441 endtuglyph;
442

```

HGLE



```
443 % hangul tail pansios-pieup
444 begint Suglyph("uniD7F3",243);
445   hangul.combine.lr(628,517)(whatever,tixf,toxf);
446   tsu_render;
447 endtsuglyph;
448
```

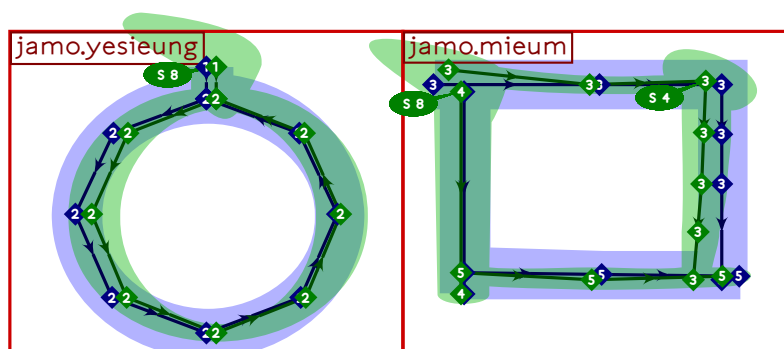


```

449 % hangul tail pansios-kapyeounpieup
450 begintsuglyph("uniD7F4",244);
451   hangul.combine.lr(628,630)(whatever,tixf,toxf);
452   tsu_render;
453 endtsuglyph;
454

```

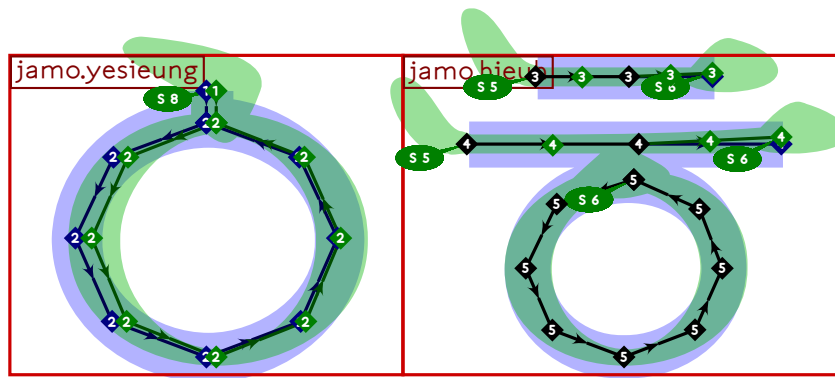
HGLE



```

455 % hangul tail yesieung-mieum
456 begintsuglyph("uniD7F5",245);
457   hangul.combine.lr(629,516)(whatever,tixf,toxf);
458   tsu_render;
459 endtsuglyph;
460

```

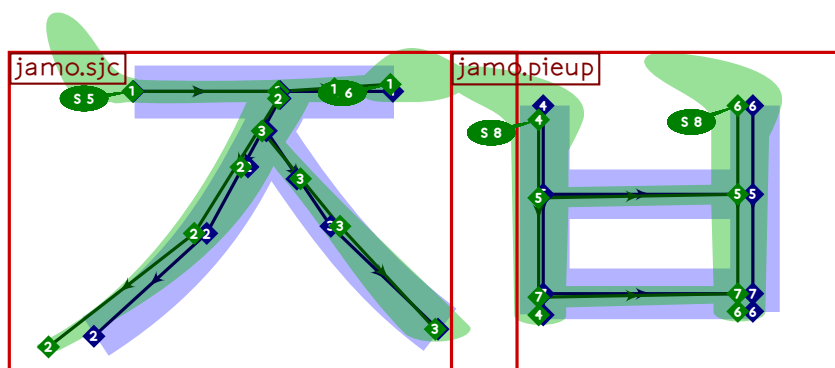
```

461 % hangul tail yesieung-hieuh
462 begint Suglyph("uniD7F6",246);
463   hangul.combine.lr(629,527)(whatever,tixf,toxf);
464   tsu_render;
465 endtsuglyph;
466

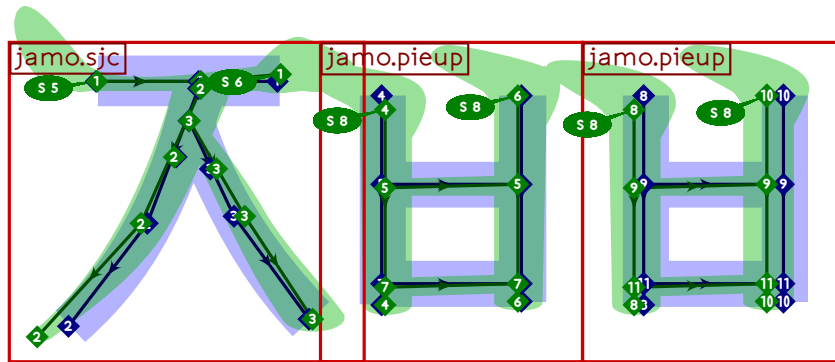
```

U+D7F7
mande.uniD7F7

HGLE



```
467 % hangul tail cieuc-pieup
468 begintsuglyph("uniD7F7";247);
469 hangul.combine.lr(522,517)(whatever,tixf,toxf);
470 tsu_render;
471 endtsuglyph;
472
```

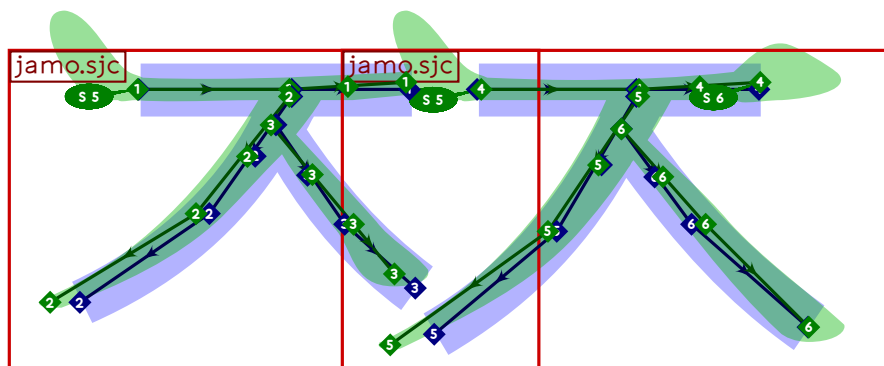


```

473 % hangul tail cieuc-ssangpieup
474 begintsuglyph("uniD7F8",248);
475   hangul.combine.lcr(522,517,517)(whatever,tixf,toxf);
476   tsu_render;
477 endtsuglyph;
478

```

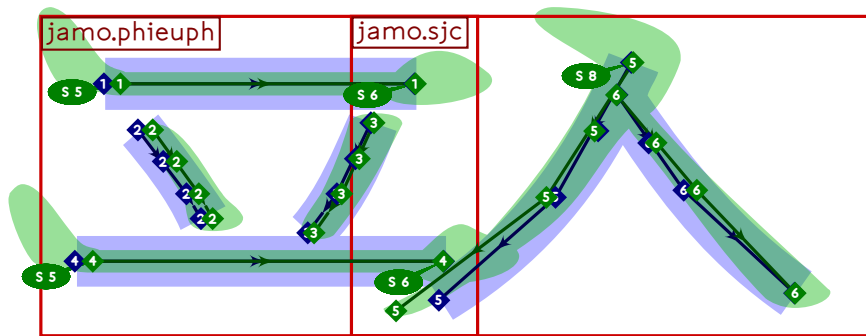
HGLE



```

479 % hangul tail ssangcieuc
480 begint Suglyph("uniD7F9",249);
481   hangul.combine.lr(622,522)(whatever,tixf,toxf);
482   tsu_render;
483 endtsuglyph;
484

```

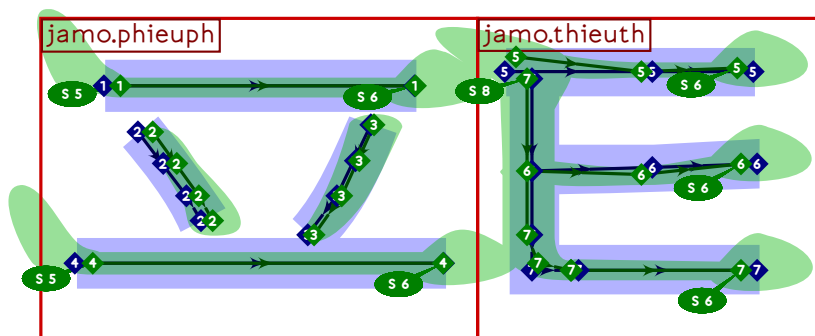


```

485 % hangul tail phieuph-sios
486 begintsuglyph("uniD7FA",250);
487   hangul.combine.lr(526,519)(whatever,tixf,toxf);
488   tsu_render;
489 endtsuglyph;
490

```

HGLE



```

491 % hangul tail phieuph-thieuth
492 begintsuglyph("uniD7FB",251);
493   hangul.combine.lcr(526,500,525)(whatever,tixf,toxf);
494   tsu_render;
495 endtsuglyph;

```

mande-bt.mp

```
1 %  
2 % Mandeubsida Batang  
3 % Copyright (C) 2011, 2013 Matthew Skala  
4 %  
5-29 [Standard copyright notice]  
30  
31 % MANDEUBSIDA BATANG  
32  
33 string familyname,stylename;  
34 familyname:="Mandeubsida";  
35 stylename:="Batang";  
36  
37 input tsuku-mi.mp;
```

BT

mande-do.mp

```
1 %  
2 % Mandeubsida Dodum  
3 % Copyright (C) 2011, 2013 Matthew Skala  
4 %  
5-29 [Standard copyright notice]  
30  
31 % MANDEUBSIDA DODUM  
32  
33 string familyname,stylename;  
34 familyname:="Mandeubsida";  
35 stylename:="Dodum";  
36  
37 input tsuku-kg.mp;
```

DO

mande-sm.mp

```
1 %  
2 % Mandeubsida Sun-Moon  
3 % Copyright (C) 2011, 2013 Matthew Skala  
4 %  
5-29 [Standard copyright notice]  
30  
31 % MANDEUBSIDA SUN-MOON  
32  
33 string familyname,stylename;  
34 familyname:="Mandeubsida";  
35 stylename:="Sun-Moon";  
36  
37 input tsuku-bk.mp;
```

hglpage.mp

```
1 %
2 % Generic Unicode page (precomposed hangul syllables) for Mandeubsida
3 % Copyright (C) 2011, 2012, 2013 Matthew Skala
4 %
5-29 [Standard copyright notice]
30
31 inclusion_lock(hglpage);
32
33 _____
34
35 beginfont
36
37 % AUTODEPS
38 input buildkanji.mp;
39 input hangul.mp;
40
41 do_late_includes;
42
43 % non-auto dep (accessed through code table)
44 input jamo-basic.mp;
45
46 string hexdigit[];
47
48 hexdigit[0]="0";hexdigit[1]="1";hexdigit[2]="2";hexdigit[3]="3";
49 hexdigit[4]="4";hexdigit[5]="5";hexdigit[6]="6";hexdigit[7]="7";
50 hexdigit[8]="8";hexdigit[9]="9";hexdigit[10]="A";hexdigit[11]="B";
51 hexdigit[12]="C";hexdigit[13]="D";hexdigit[14]="E";hexdigit[15]="F";
52
53 for i:=0 upto 255:
54   begintsuglyph("uni" & hgls_page
55     & hexdigit[floor(i/16)] & hexdigit[i mod 16],i);
56 message "uni" & hgls_page
57   & hexdigit[floor(i/16)] & hexdigit[i mod 16];
58   hangul.combine.syllable(100+hgls_lead,300+hgls_vowel,500+hgls_tail)
59     (300+hgls_vowel,identity,identity);
60   tsu_render;
61 endtsuglyph;
62 hgls_tail:=hgls_tail+1;
63 if hgls_tail>=28:
64   hgls_tail:=0;
65   hgls_vowel:=hgls_vowel+1;
66   if hgls_vowel>=21:
67     hgls_vowel:=0;
68     hgls_lead:=hgls_lead+1;
69     exitif hgls_lead>=19;
70   fi;
```

```
71 fi;  
72 endfor;
```

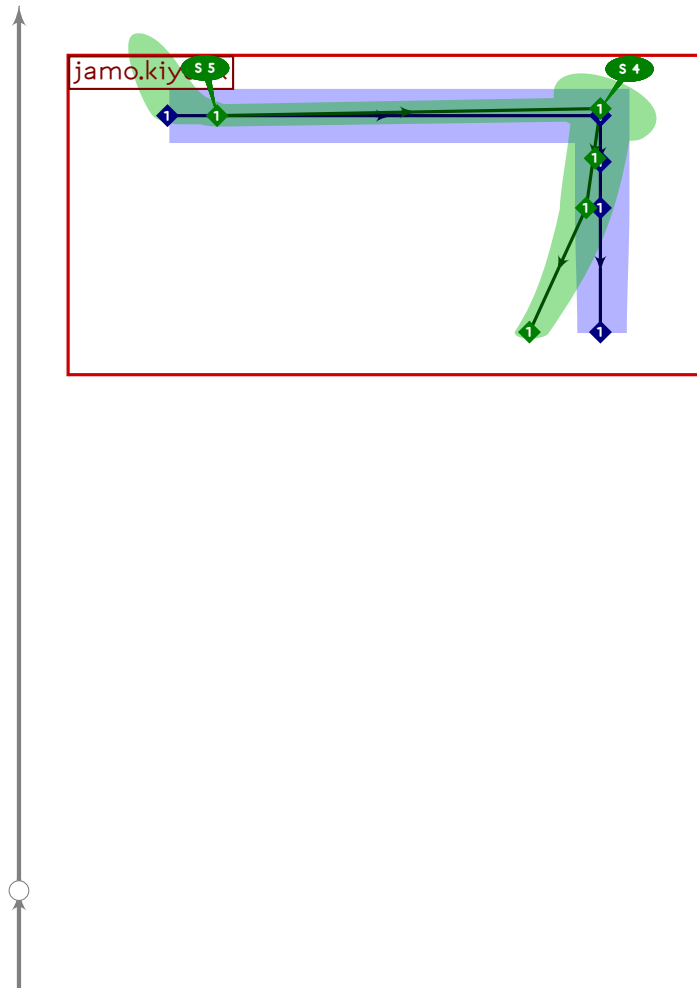
HGLP

mande-11.mp

```
1 %
2 % Unicode page 11 (Hangul Jamo) for Mandeubsida
3 % Copyright (C) 2011, 2012, 2013 Matthew Skala
4 %
5-29 [Standard copyright notice]
30
31
32
33 beginfont
34
35 % AUTODEPS
36 input hangul.mp;
37 input jamo-basic.mp;
38 input jamo-extra.mp;
39
40 do_late_includes;
41
42
43
44 % This file covers the basic layout (layout 0): a lead, a vowel that may
45 % go both vertically and horizontally, and a non-empty tail. All jamo are
46 % defined for this layout. Other files (in private-use plane 15) define
47 % versions of some jamo for other layouts; the idea is that the jamo here
48 % are defaults, and an OpenType feature can substitute the others (or entire
49 % precomposed syllables) to improve the layout where applicable.
50
51 transform lixf,loxf,vixf,tvixf,vox,f,tixf,toxf;
52
53 lixf=loxf=hxf((50,850),(700,525));
54 vixf=hxf((700,475),(950,250));
55 tvixf=hxf((700,535),(950,240));
56 vox=f=hxf((50,850),(950,250));
57 tixf=hxf((100+20*mincho,275),(900-20*mincho,-50)) shifted (-1000,0);
58 toxf=hxf((50,275),(950,-50)) shifted (-1000,0);
59
60
61
```

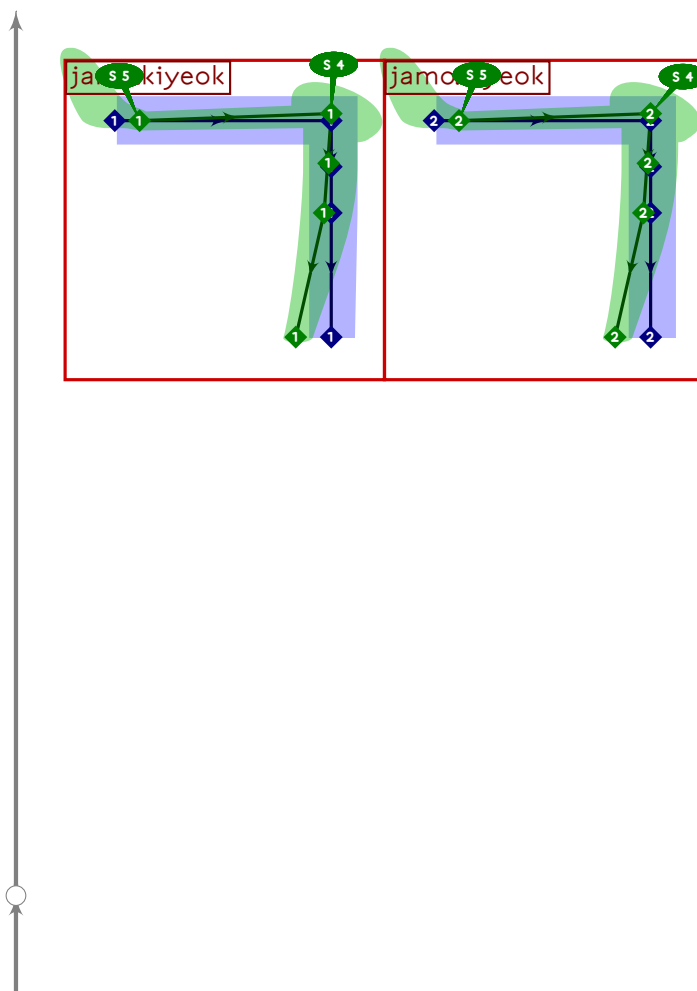
Hangul Choseong (Lead) Jamo

```
62 % HANGUL CHOSEONG (LEAD) JAMO
63
64 tsu__rescale__native__zero;
65
```

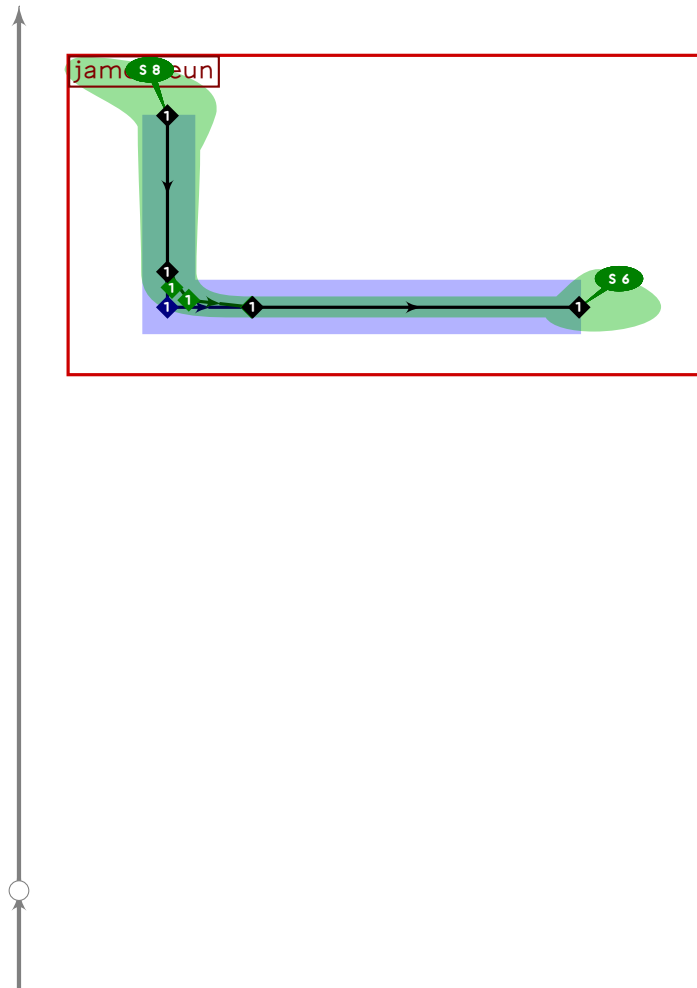


```
66 % hangul lead kiyeok
67 begintsuglyph("uni1100";0);
68   hangul.jamo.kiyeok(whatever,lixf,loxf);
69   tsu_render;
70 endtsuglyph;
71
```

U+1101
mande.uni1101

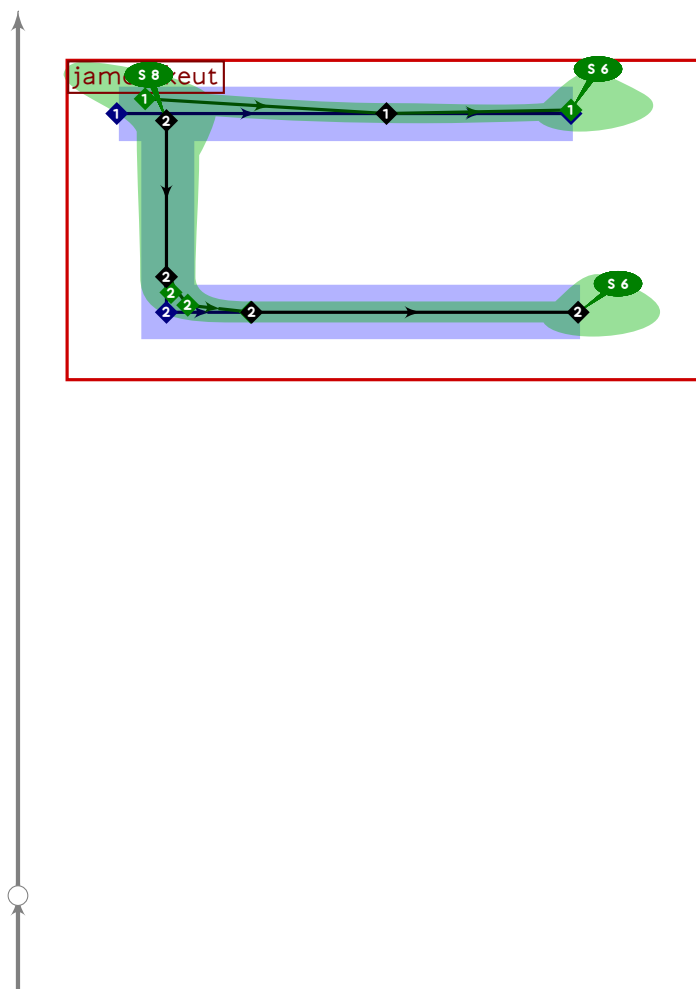


```
72 % hangul lead ssangkiyeok
73 begintsuglyph("uni1101",1);
74 hangul.combine.lr(100,100)(whatever,lixf,loxf);
75 tsu_render;
76 endtsuglyph;
77
```

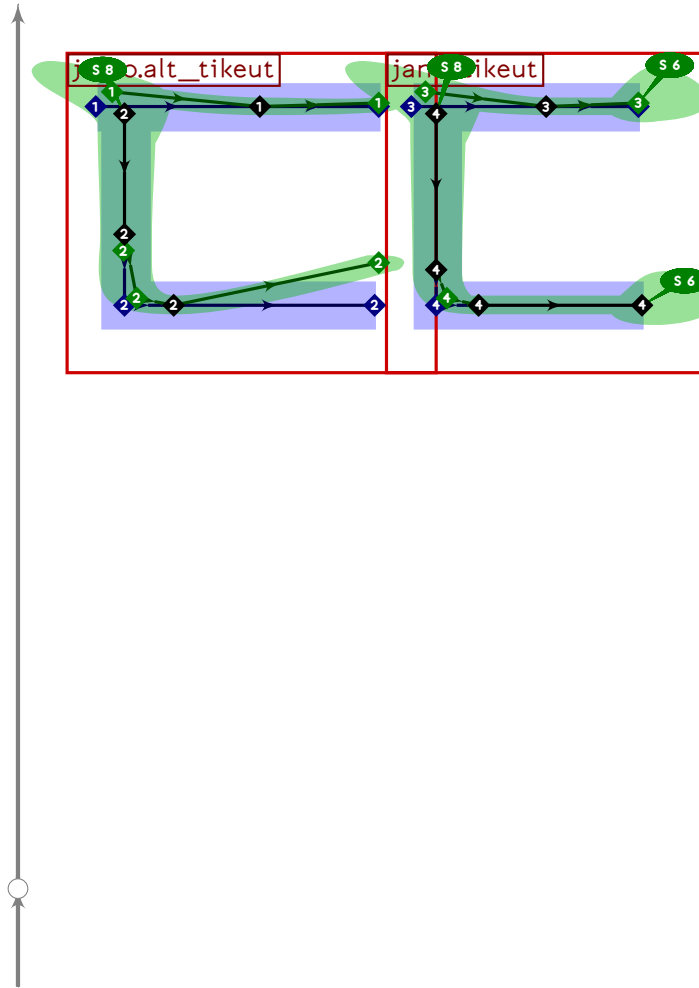


```
78 % hangul lead nieun
79 begintsuglyph("uni1102";2);
80 hangul.jamo.nieun(whatever,lixf,loxf);
81 tsu_render;
82 endtsuglyph;
83
```

U+1103
mande.uni1103



```
84 % hangul lead tikeut
85 begint Suglyph("uni1103"3);
86   hangul.jamo.tikeut(whatever,lixf,loxf);
87   tsu__render;
88 endtsuglyph;
89
```

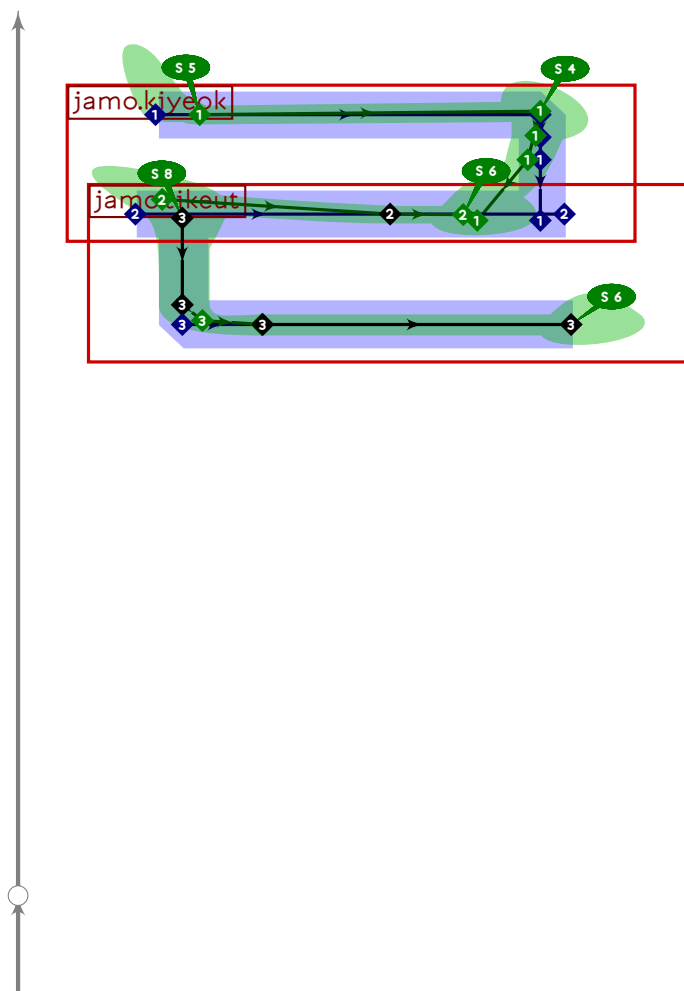



```

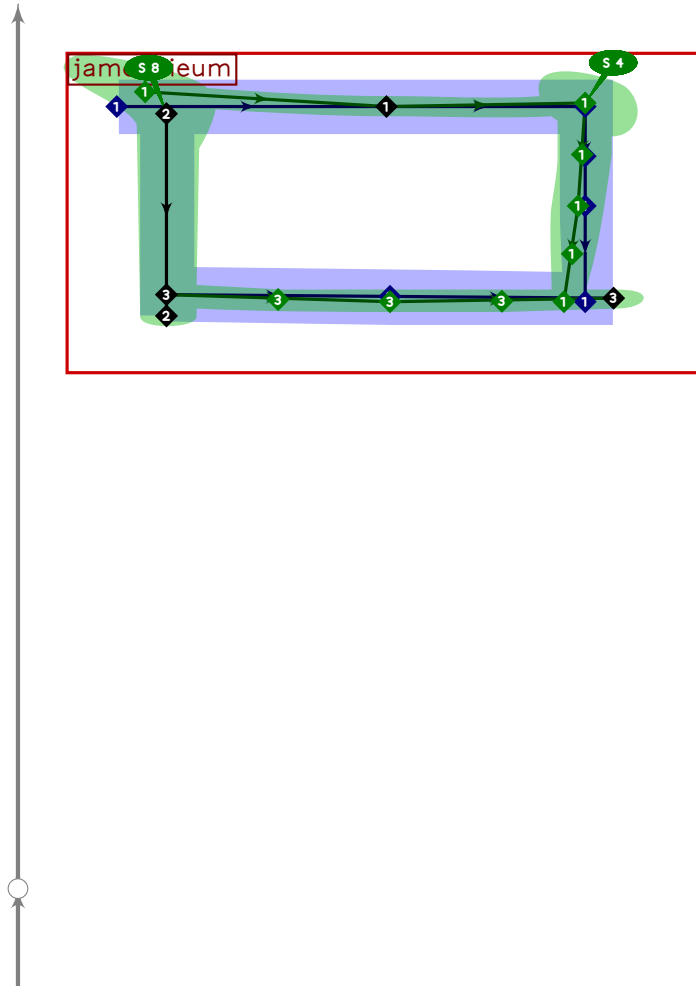
90 % hangul lead ssangtikeut
91 begintsuglyph("uni1104"4);
92   hangul.combine.lr(203,103)(whatever,lixf,loxf);
93   tsu_render;
94 endtsuglyph;
95

```

U+1105
mande.uni1105

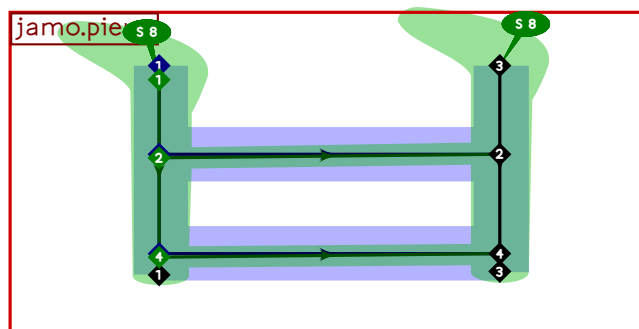


```
96 % hangul lead rieul
97 begint Suglyph("uni1105",5);
98   hangul.jamo.rieul(whatever,lxf,lxf);
99   tsu_render;
100 endtsuglyph;
101
```

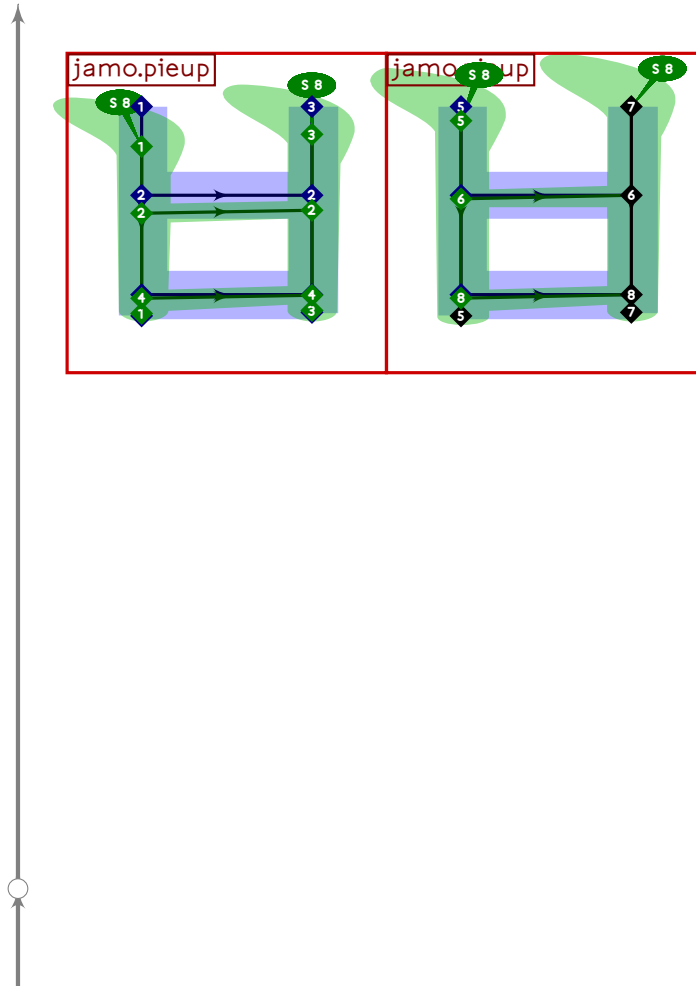


```
102 % hangul lead mieum
103 beginsuglyph("uni1106";6);
104   hangul.jamo.mieum(whatever,lixf,loxf);
105   tsu_render;
106 endsuglyph;
107
```

U+1107
mande.uni1107



```
108 % hangul lead pieup
109 begint Suglyph("uni1107";7);
110   hangul.jamo.pieup(whatever,lixf,loxf);
111   tsu_render;
112 endtsuglyph;
113
```

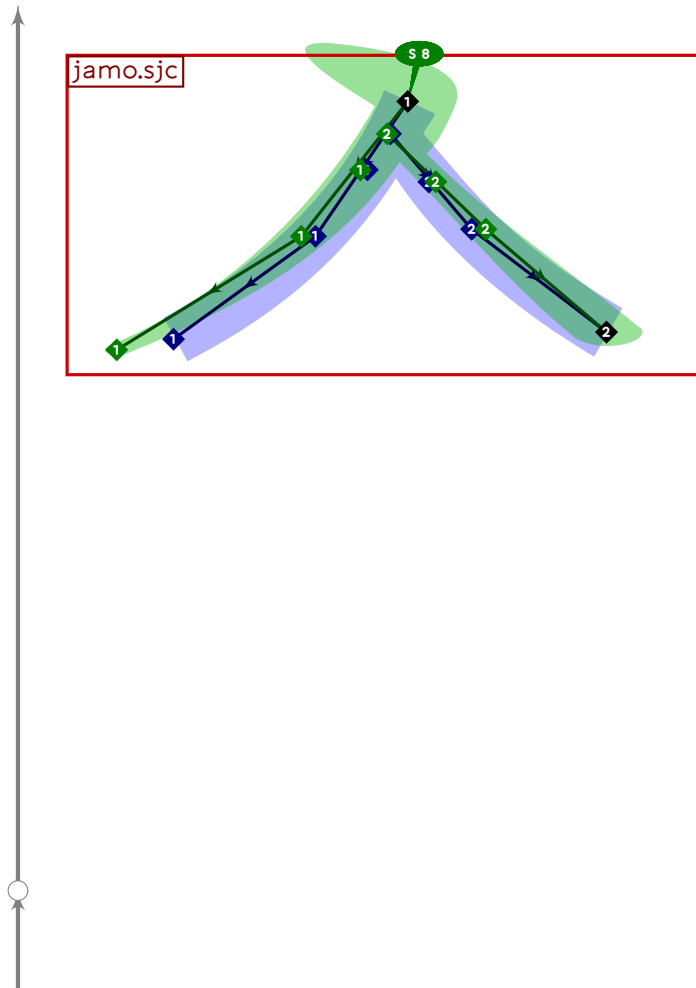


```

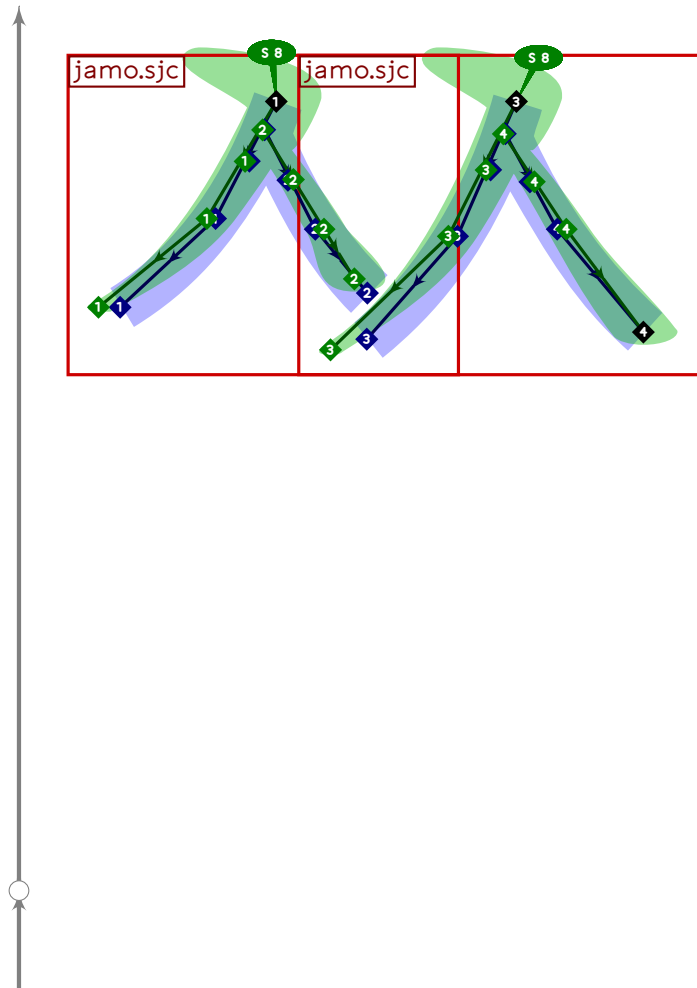
114 % hangul lead ssangpieup
115 begintsuglyph("uni1108";8);
116 hangul.combine.lr(207,107)(whatever,lixf,loxf);
117 tsu_render;
118 endtsuglyph;
119

```

U+1109
mande.uni1109



```
120 % hangul lead sios
121 begintsuglyph("uni1109"9);
122   hangul.jamo.sjc(0,0,false)(whatever,lixf,loxf);
123   tsu_render;
124 endsuglyph;
125
```

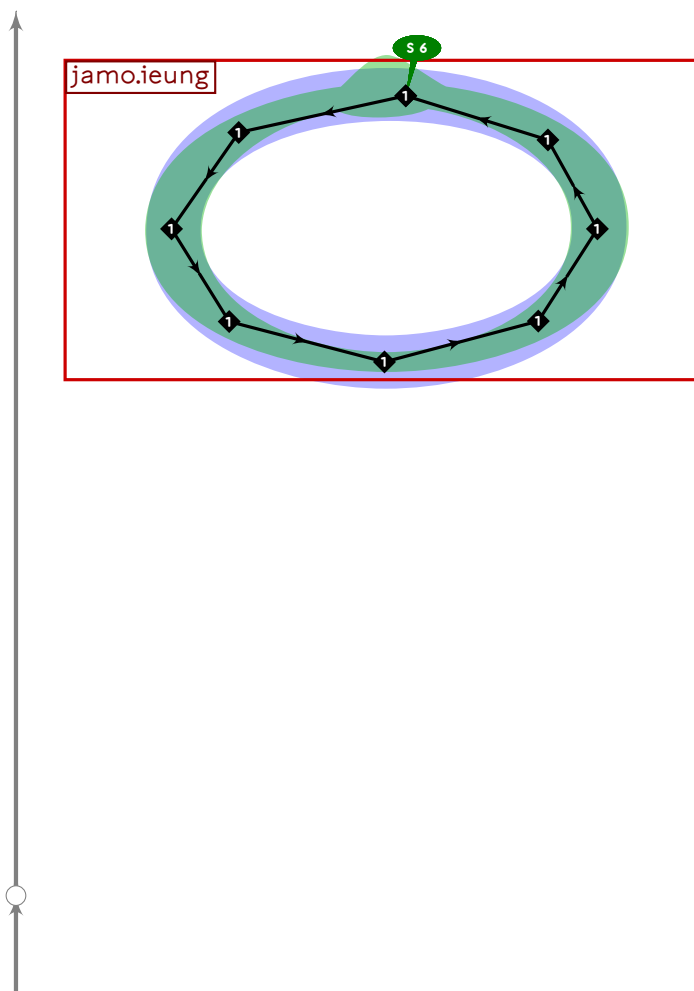


```

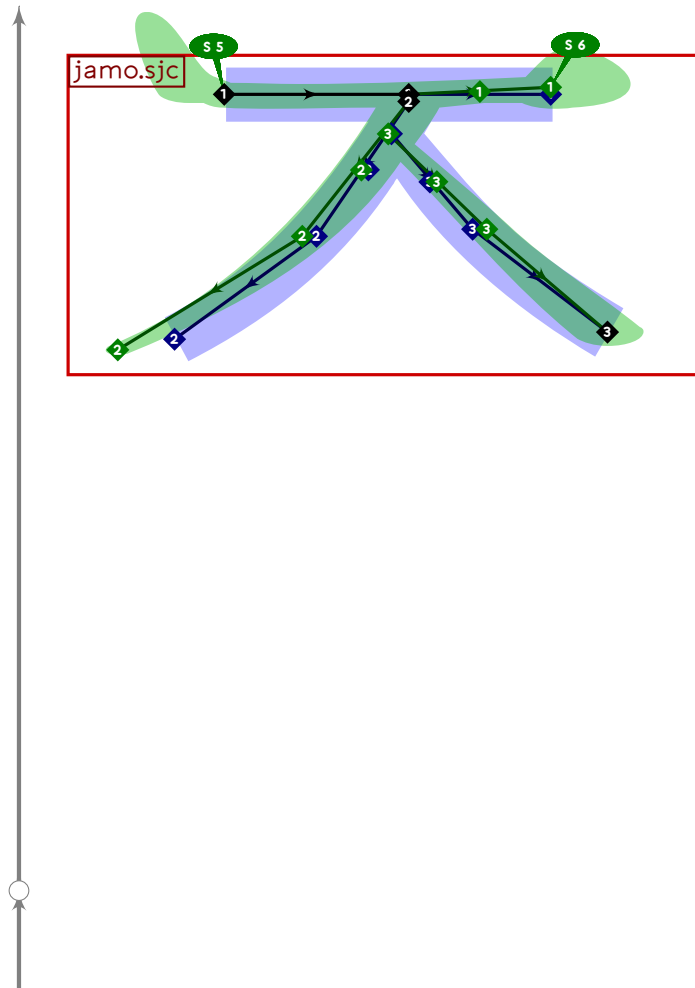
126 % hangul lead ssangsios
127 begintsuglyph("uni110A";10);
128   hangul.combine.lr(209;109)(whatever,lix,loxf);
129   tsu_render;
130 endsuglyph;
131

```

U+110B
mande.uni110B



```
132 % hangul lead ieung
133 beginsuglyph("uni110B",11);
134   hangul.jamo.ieung(whatever,lixf,loxf);
135   tsu_render;
136 endsuglyph;
137
```

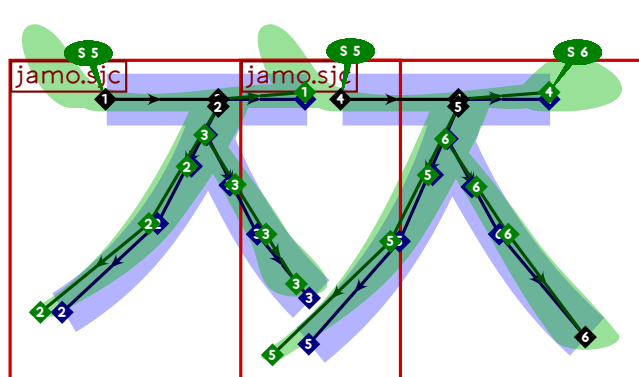



```

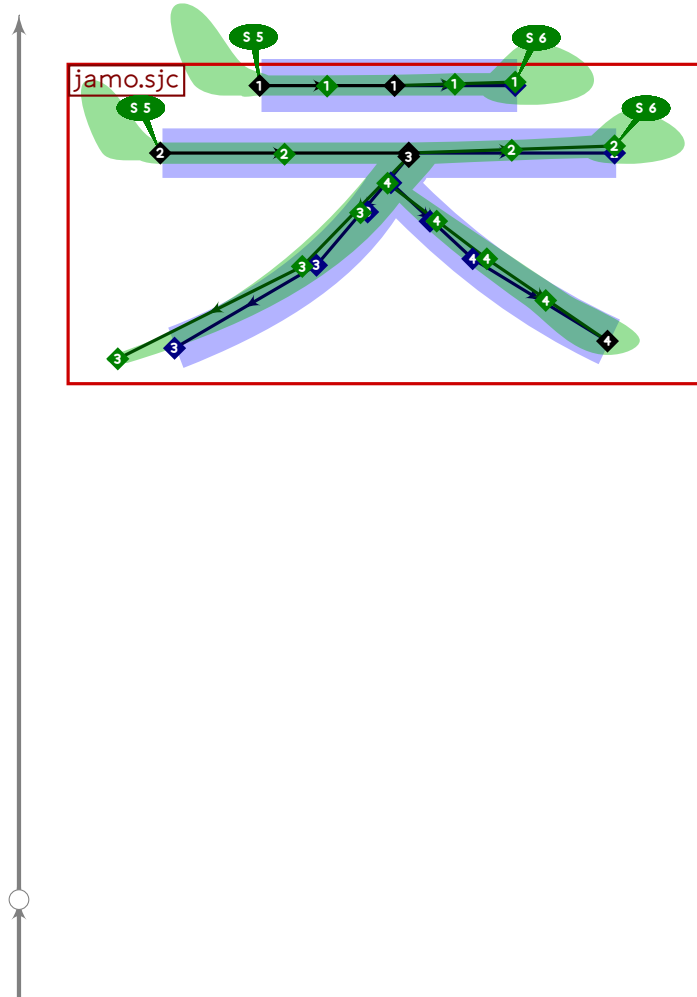
138 % hangul lead cieuc
139 begint Suglyph("uni110C",12);
140   hangul.jamo.sjc(1,0,false)(whatever,lixf,loxf);
141   tsu_render;
142 endtsuglyph;
143

```

U+110D
mande.uni110D



```
144 % hangul lead ssangcieuc
145 begintsuglyph("uni110D",13);
146 hangul.combine.lr(212,112)(whatever,lixf,loxf);
147 tsu_render;
148 endtsuglyph;
149
```

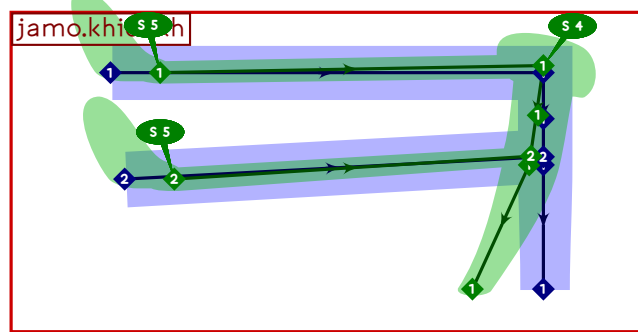


```

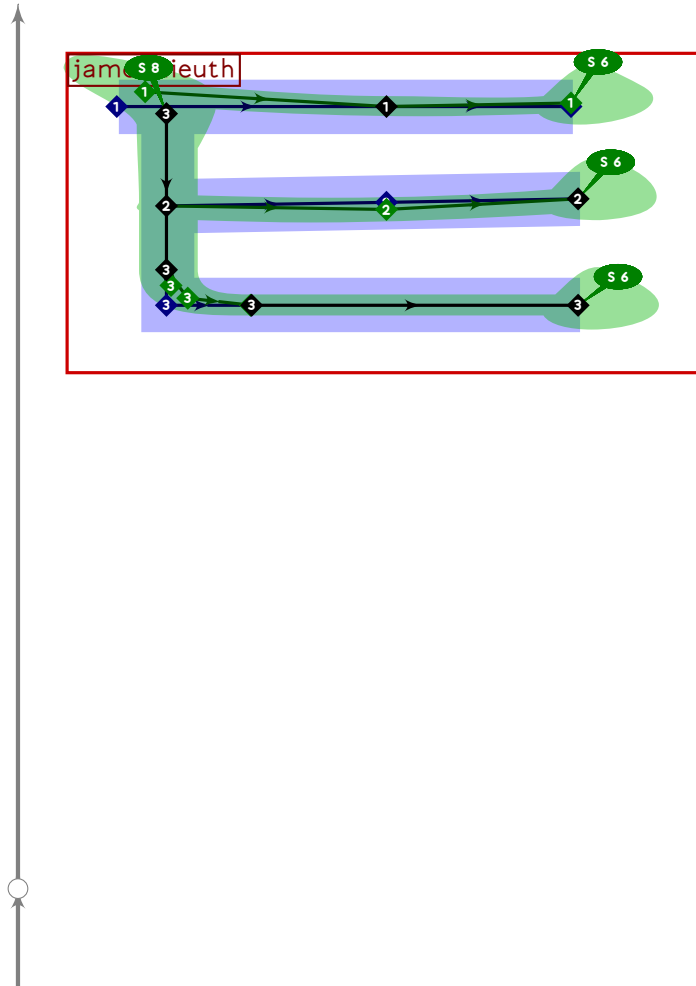
150 % hangul lead chieuch
151 begint Suglyph("uni110E",14);
152   hangul.jamo.sjc(2,0,false)(whatever,lixf,loxf);
153   tsu_render;
154 endtsuglyph;
155

```

U+110F
mande.uni110F



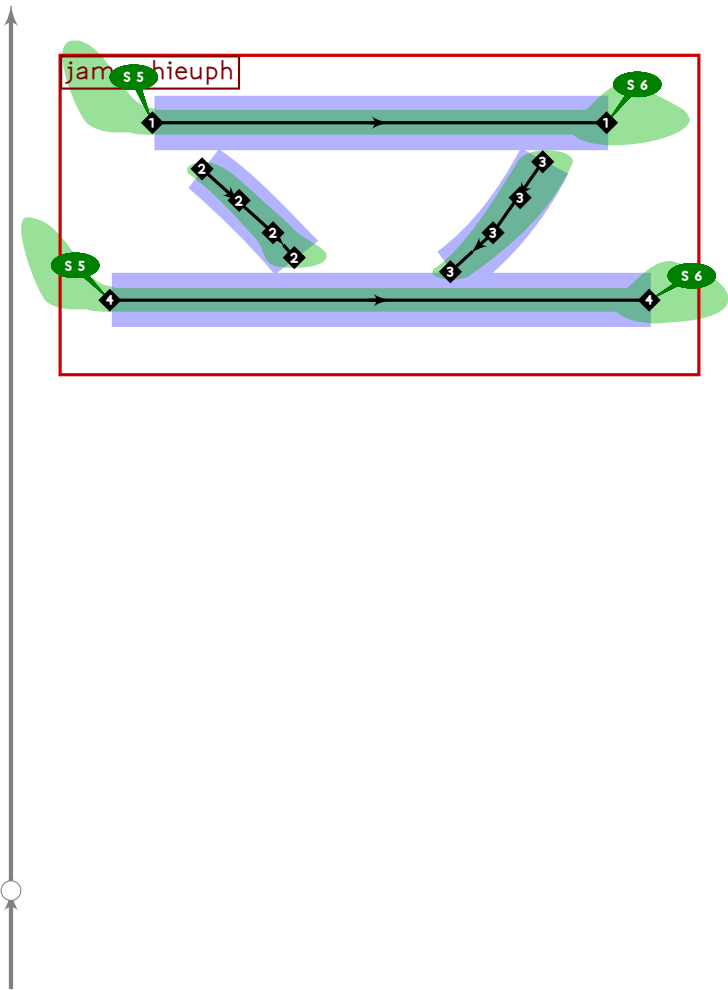
```
156 % hangul lead khieukh
157 begint Suglyph("uni110F";15);
158 hangul.jamo.khieukh(whatever,lixf,loxf);
159 tsu_render;
160 endtsuglyph;
161
```



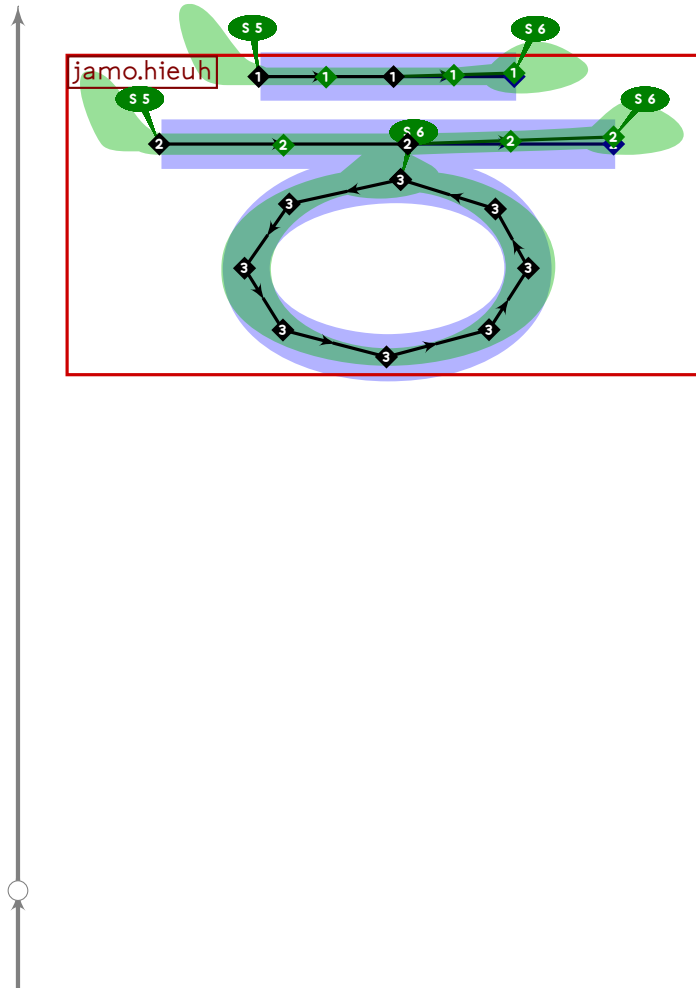
```

162 % hangul lead thieuth
163 begintsuglyph("uni1110",16);
164   hangul.jamo.thieuth(whatever,lixf,loxf);
165   tsu_render;
166 endtsuglyph;
167

```



```
168 % hangul lead phieuph
169 begintsuglyph("uni1111";17);
170 hangul.jamo.phieuph(whatever,lixf,loxf);
171 tsu_render;
172 endtsuglyph;
173
```

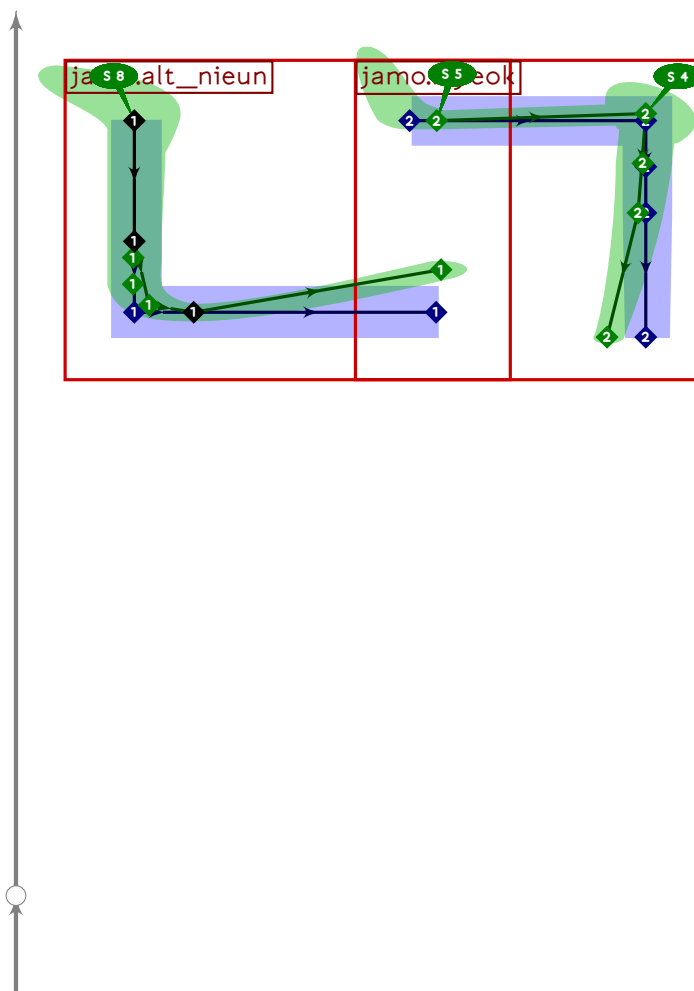


```

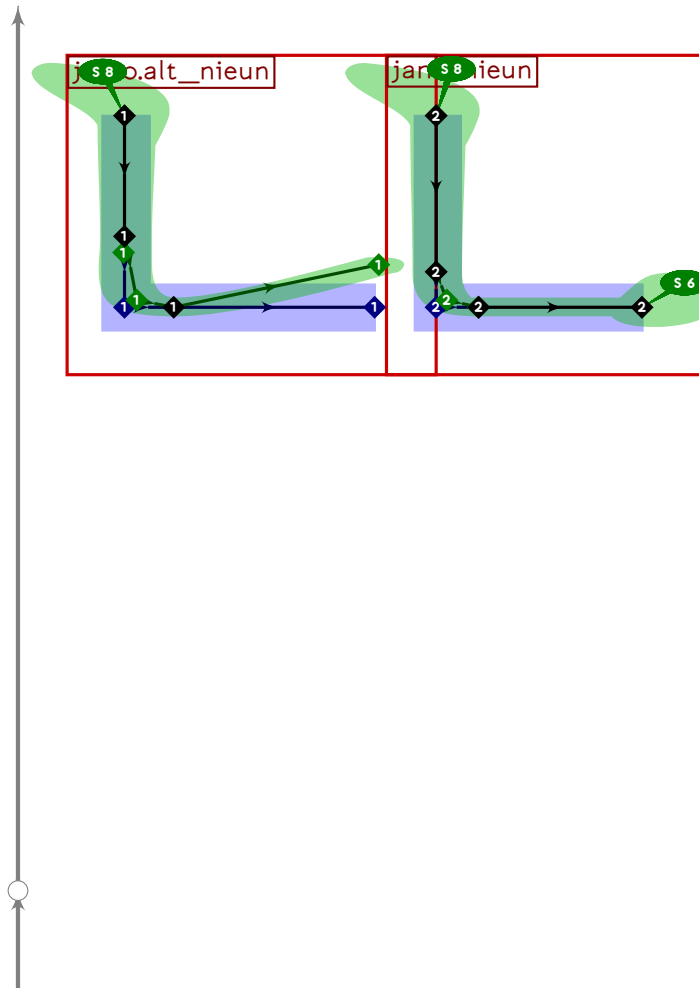
174 % hangul lead hieuh
175 beginsuglyph("uni1112",18);
176   hangul.jamo.hieuh(whatever,lixf,loxf);
177   tsu_render;
178 endsuglyph;
179

```

U+1113
mande.uni1113

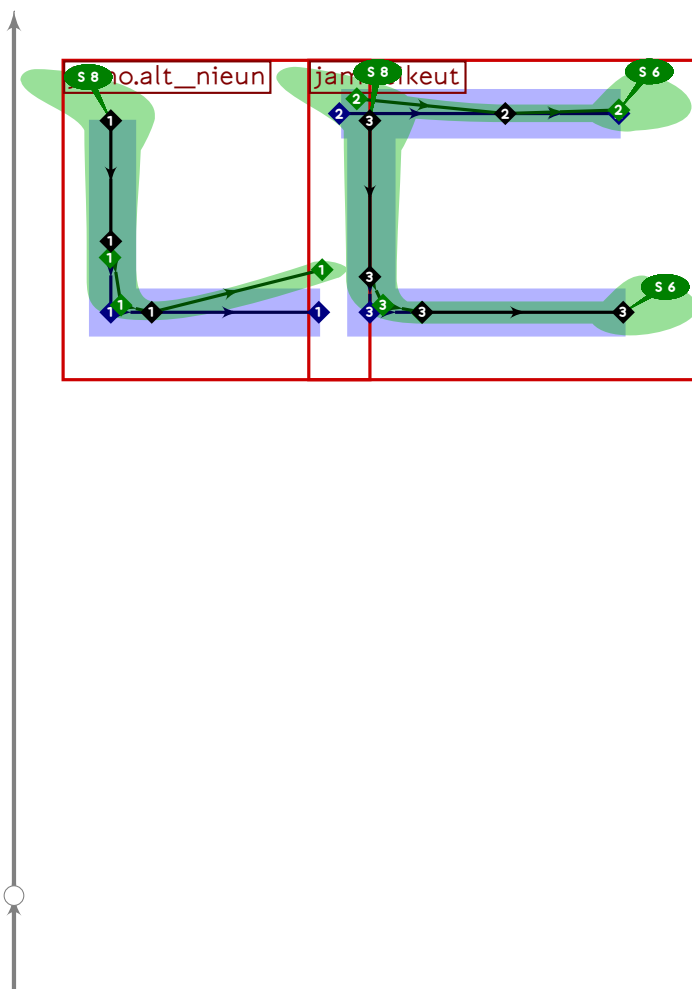


```
180 % hangul lead nieun-kiyeok
181 begintsuglyph("uni1113",19);
182 hangul.combine.lr(202,100)(whatever,lixf,loxf);
183 tsu_render;
184 endtsuglyph;
185
```

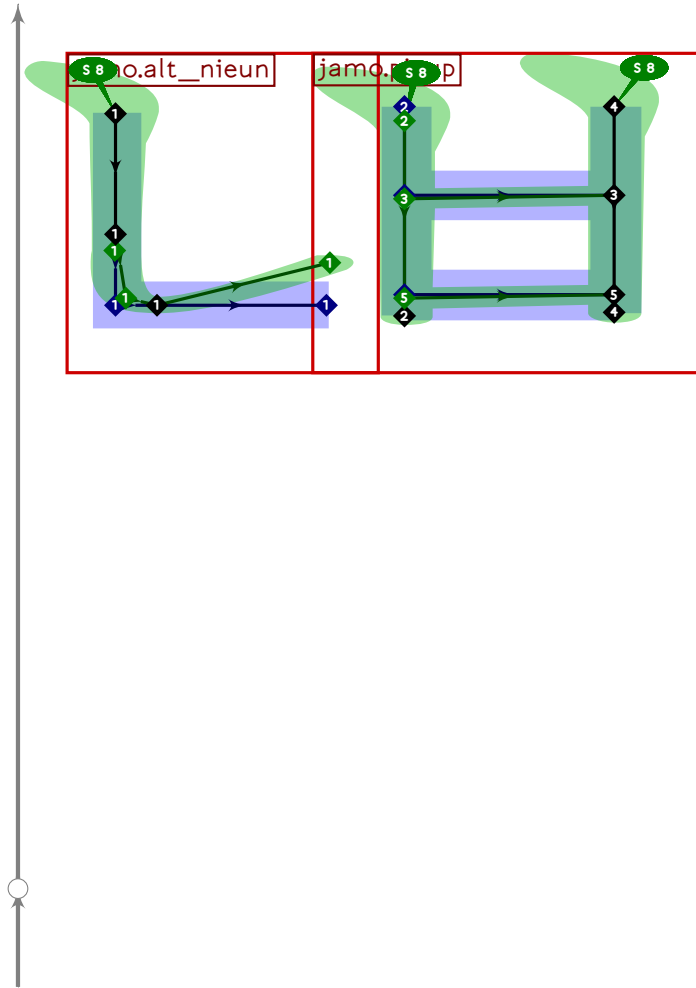



```
186 % hangul lead ssangnieun
187 begintsuglyph("uni1114";20);
188 hangul.combine.lr(202,102)(whatever,lixf,loxf);
189 tsu_underscore;
190 endtsuglyph;
191
```

U+1115
mande.uni1115



```
192 % hangul lead nieun-tikeut
193 beginsuglyph("uni1115";21);
194 hangul.combine.lr(202,103)(whatever,lixf,loxf);
195 tsu_render;
196 endsuglyph;
197
```

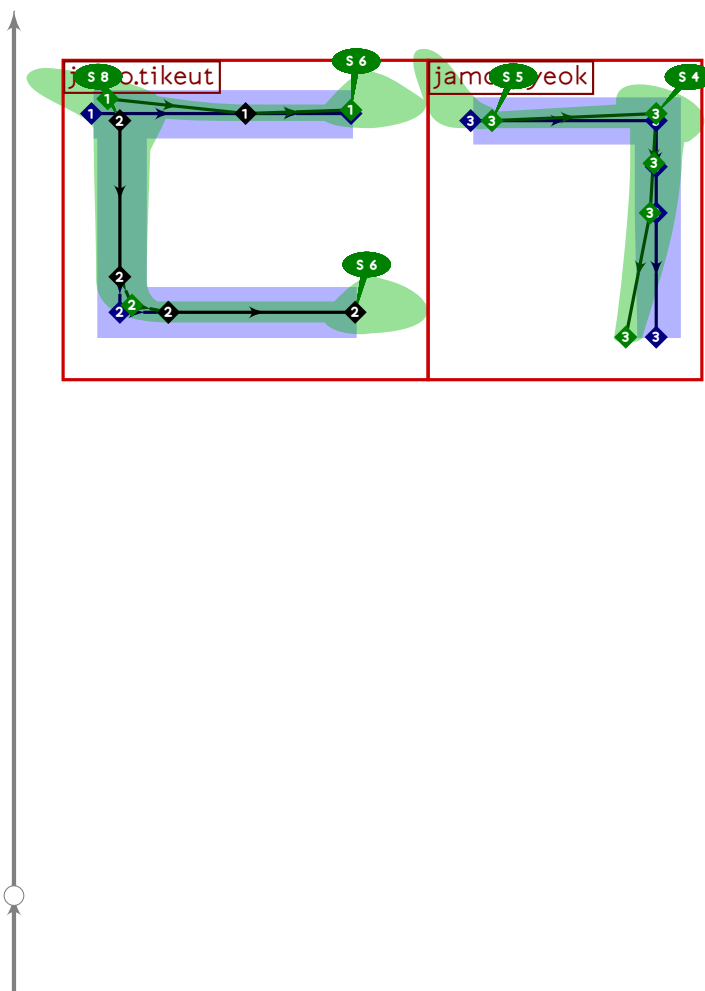


```

198 % hangul lead nieun-pieup
199 begintsuglyph("uni1116";22);
200 hangul.combine.lr(202,107)(whatever,lixf,loxf);
201 tsu_render;
202 endtsuglyph;
203

```

U+1117
mande.uni1117



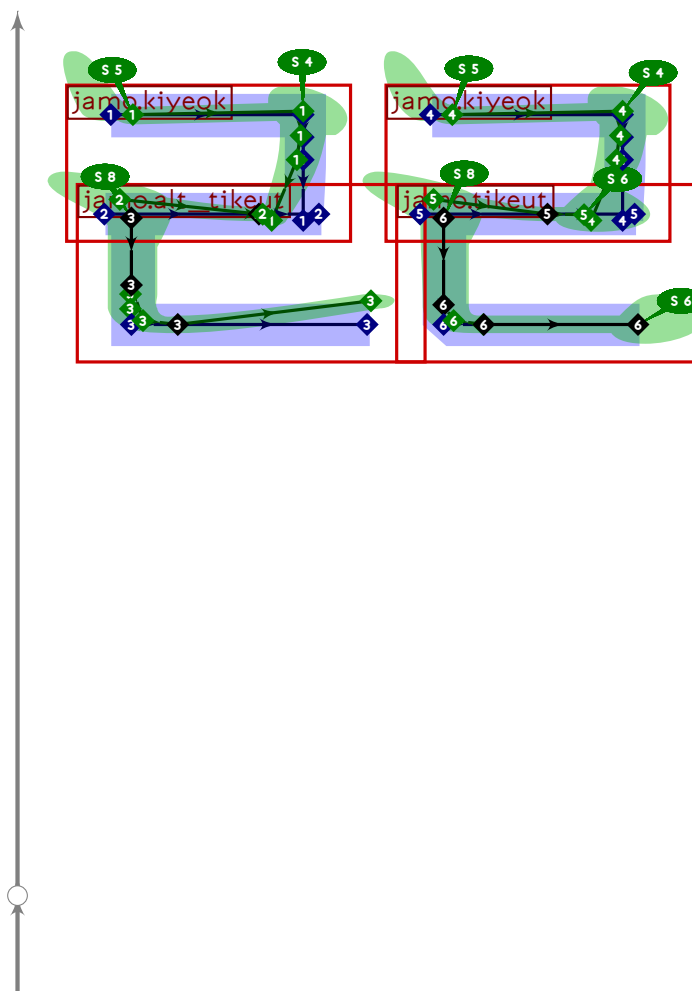
```
204 % hangul lead tikeut-kiyeok
205 begintsuglyph("uni1117",23);
206 hangul.combine.lr(103,100)(whatever,lixf,loxf);
207 tsu_render;
208 endtsuglyph;
209
```



```

210 % hangul lead rieul-nieun
211 begintsuglyph("uni1118";24);
212   hangul.combine.lr(205,102)(whatever,lixf,loxf);
213   tsu__render;
214 endsuglyph;
215

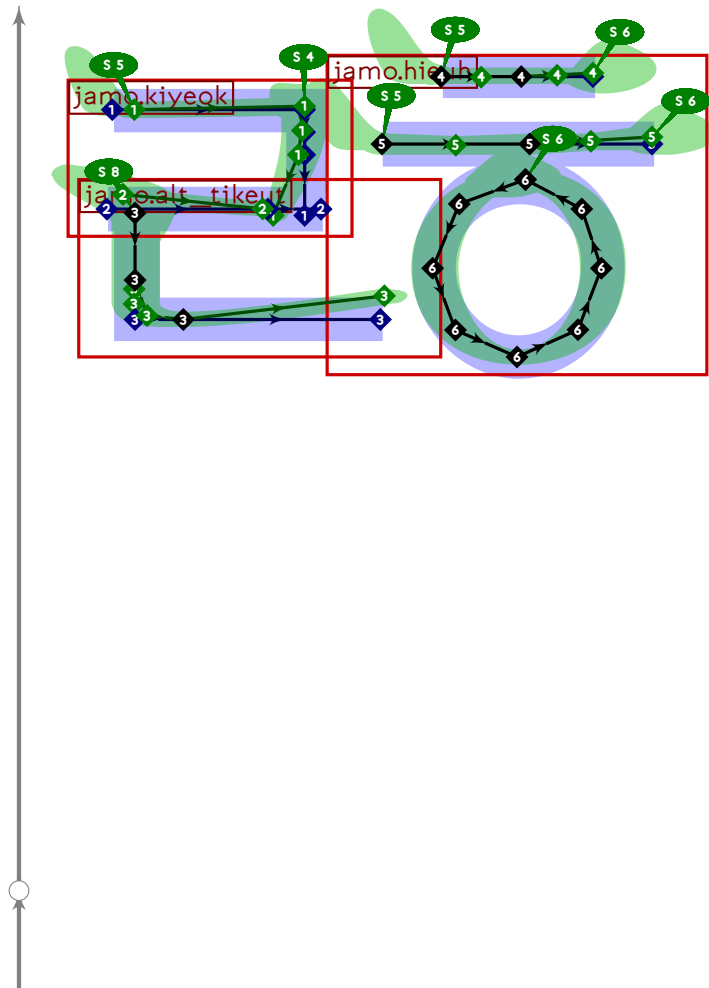
```



```

216 % hangul lead ssangrieul
217 begintsuglyph("uni1119";25);
218   hangul.combine.lr(205,105)(whatever,lixf,loxf);
219   tsu_render;
220 endsuglyph;
221

```

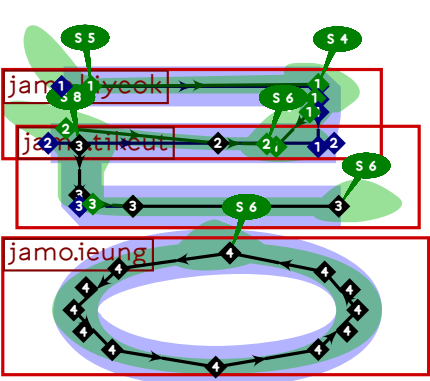


```

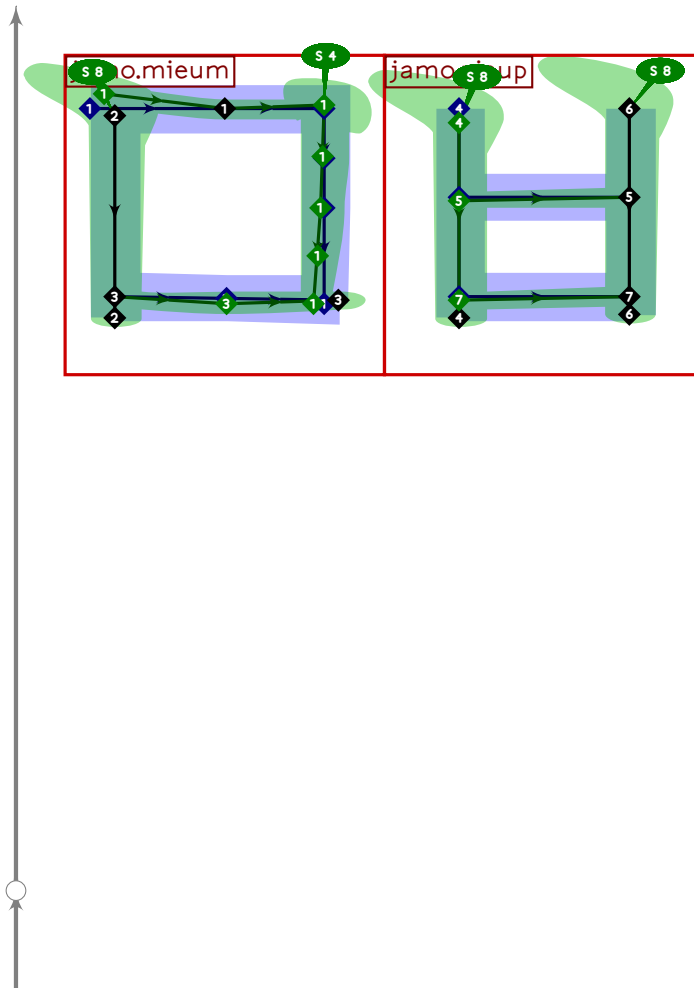
222 % hangul lead rieul-hieuh
223 begintsuglyph("uni111A";26);
224   hangul.combine.lr(205,118)(whatever,lixf,loxf);
225   tsu_render;
226 endtsuglyph;
227

```

U+111B
mande.uni111B



```
228 % hangul lead kapyeounrieul
229 begintsuglyph("uni111B",27);
230   hangul.combine.tb(105,521)(whatever,
231     hxf((200,850),(800,-50)) transformed lixf,loxf);
232   tsu_render;
233 endtsuglyph;
234
```

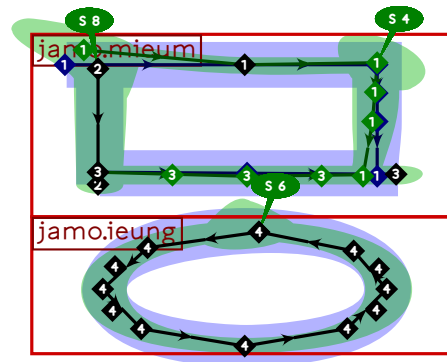



```

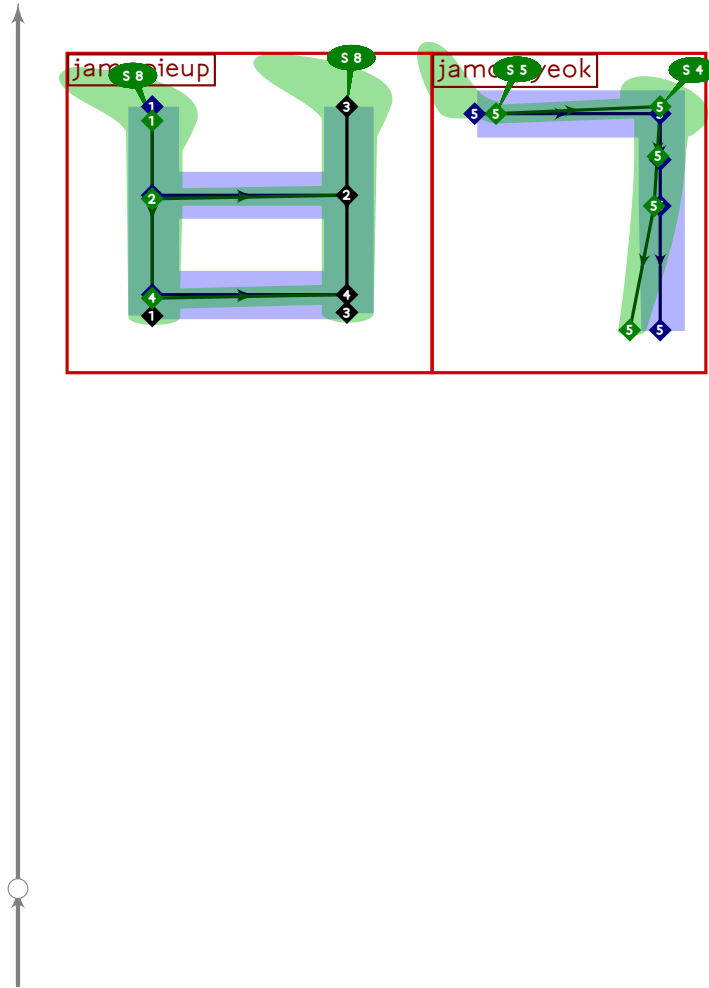
235 % hangul lead mieum-pieup
236 begint Suglyph("uni111C",28);
237   hangul.combine.lr(106,107)(whatever,lixf,loxf);
238   tsu_render;
239 endtsuglyph;
240

```

U+111D
mande.uni111D



```
241 % hangul lead kapyeounmieum
242 begintsuglyph("uni111D";29);
243   hangul.combine.tb(106,521)(whatever,
244     hxf((200,850),(800,-50)) transformed lixf,loxf);
245   tsu_render;
246 endtsuglyph;
247
```

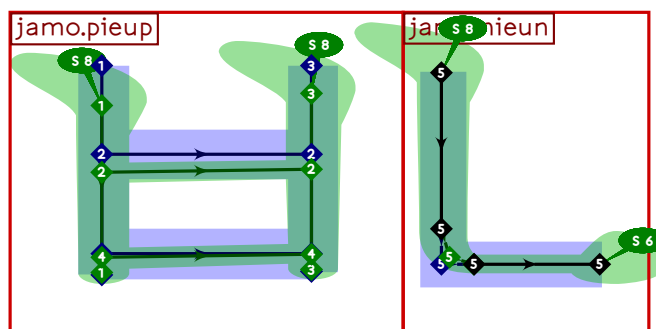


```

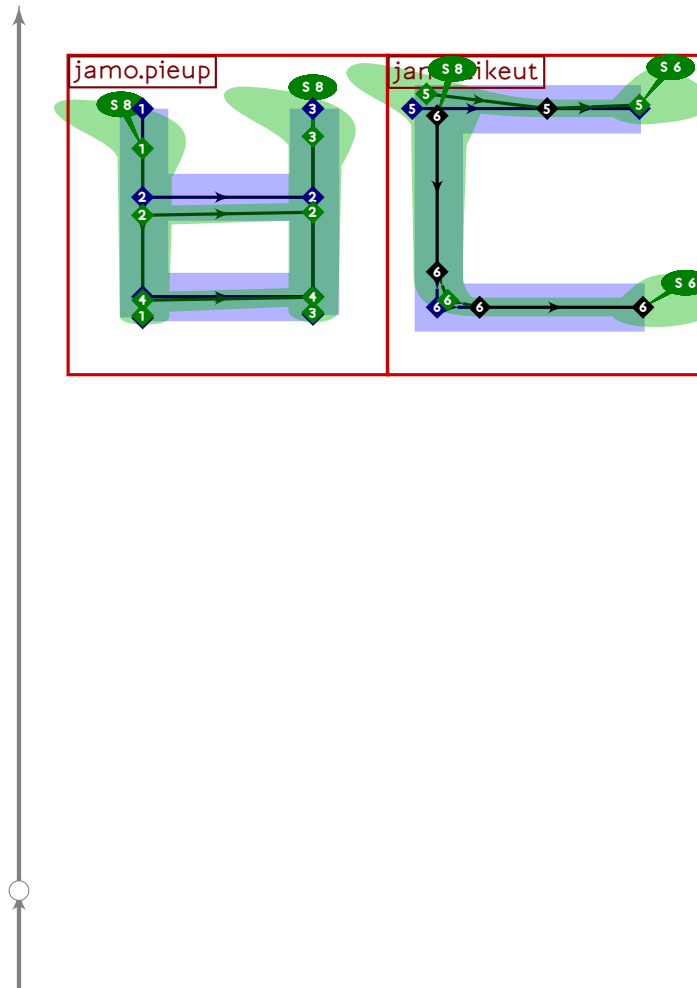
248 % hangul lead pieup-kiyeok
249 begintsuglyph("uni111E",30);
250 hangul.combine.lr(107,100)(whatever,lixf,loxf);
251 tsu_render;
252 endsuglyph;
253

```

U+111F
mande.uni111F



```
254 % hangul lead pieup-nieun
255 begintsuglyph("uni111F",31);
256 hangul.combine.lr(207,102)(whatever,lixf,loxf);
257 tsu_render;
258 endtsuglyph;
259
```

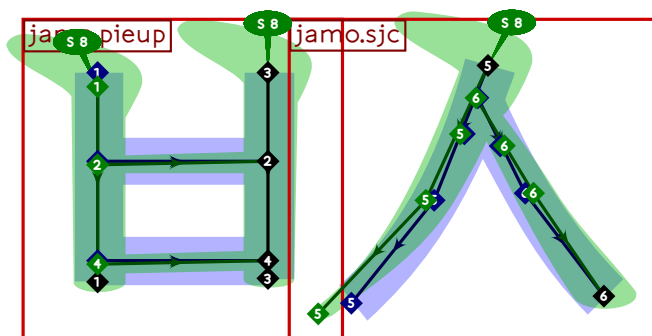


```

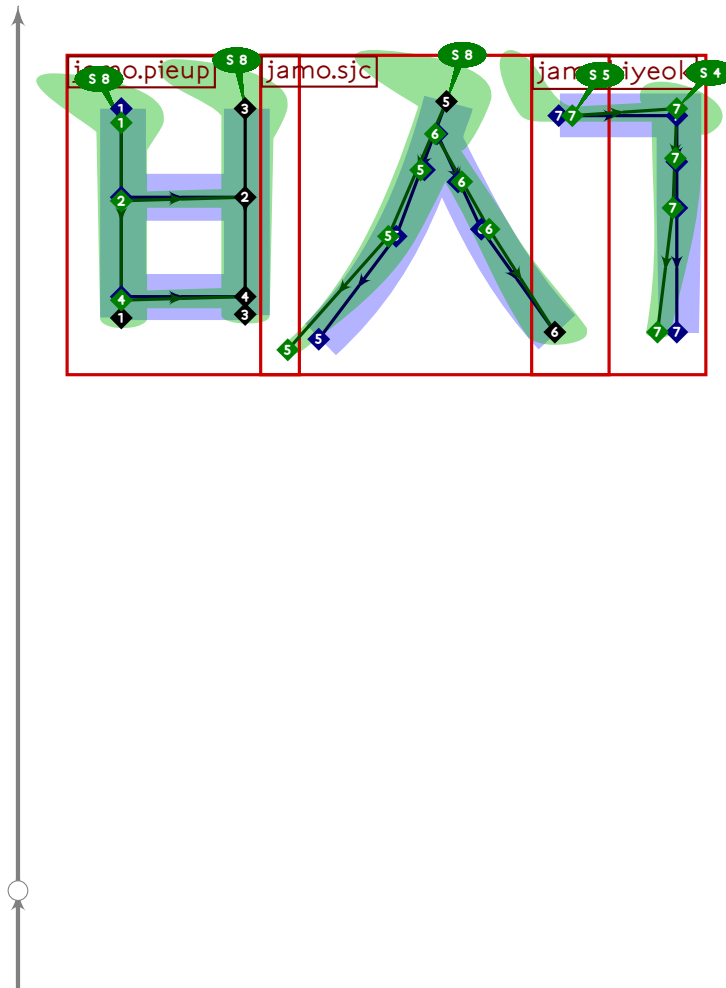
260 % hangul lead pieup-tikeut
261 begintsuglyph("uni1120";32);
262   hangul.combine.lr(207,103)(whatever,lixf,loxf);
263   tsu_render;
264 endtsuglyph;
265

```

U+1121
mande.uni1121



```
266 % hangul lead pieup-sios
267 begintsuglyph("uni1121",33);
268   hangul.combine.lr(107,109)(whatever,lixf,loxf);
269   tsu_render;
270 endtsuglyph;
271
```

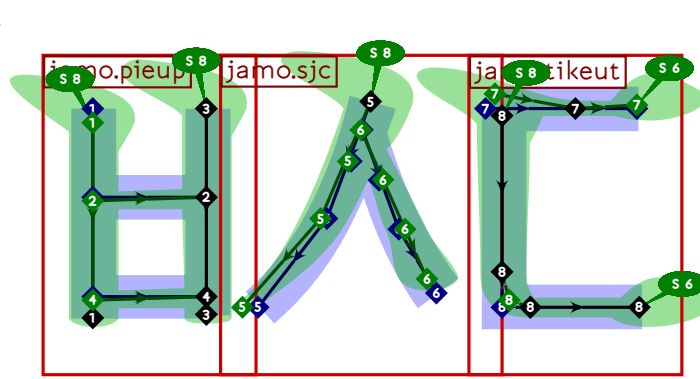


```

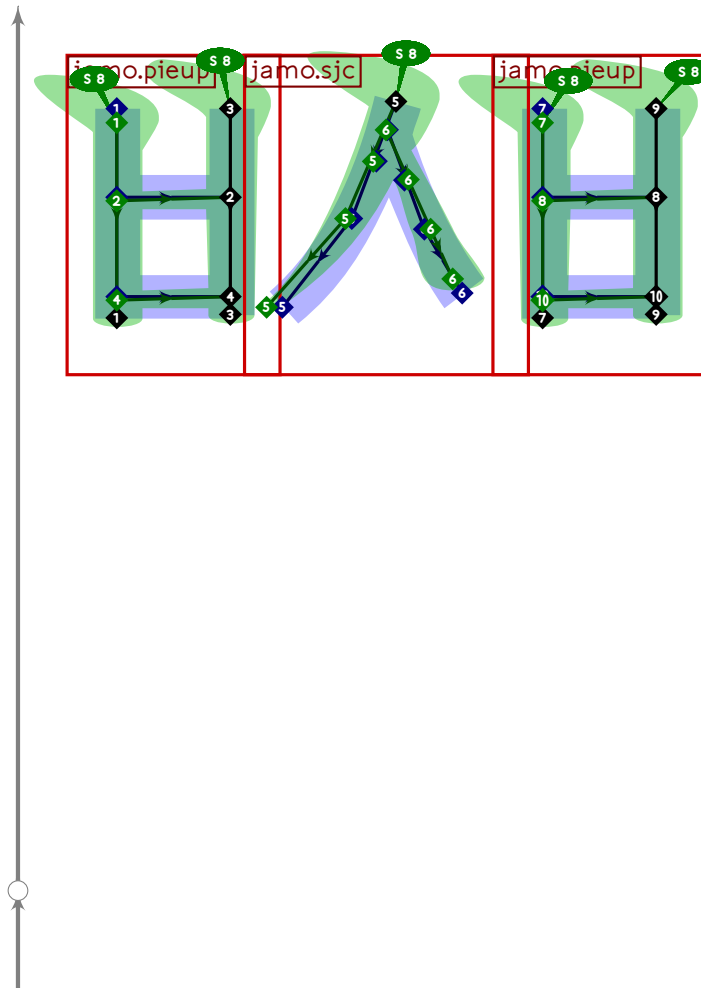
272 % hangul lead pieup-sios-kiyeok
273 begintsuglyph("uni1122";34);
274   hangul.combine.lcr(107,109;100)(whatever,lixf,loxf);
275   tsu_render;
276 endtsuglyph;
277

```

U+1123
mande.uni1123



```
278 % hangul lead pieup-sios-tikeut
279 begintsuglyph("uni1123";35);
280 hangul.combine.lcr(107,209,103)(whatever,lixf,loxf);
281 tsu_render;
282 endtsuglyph;
283
```

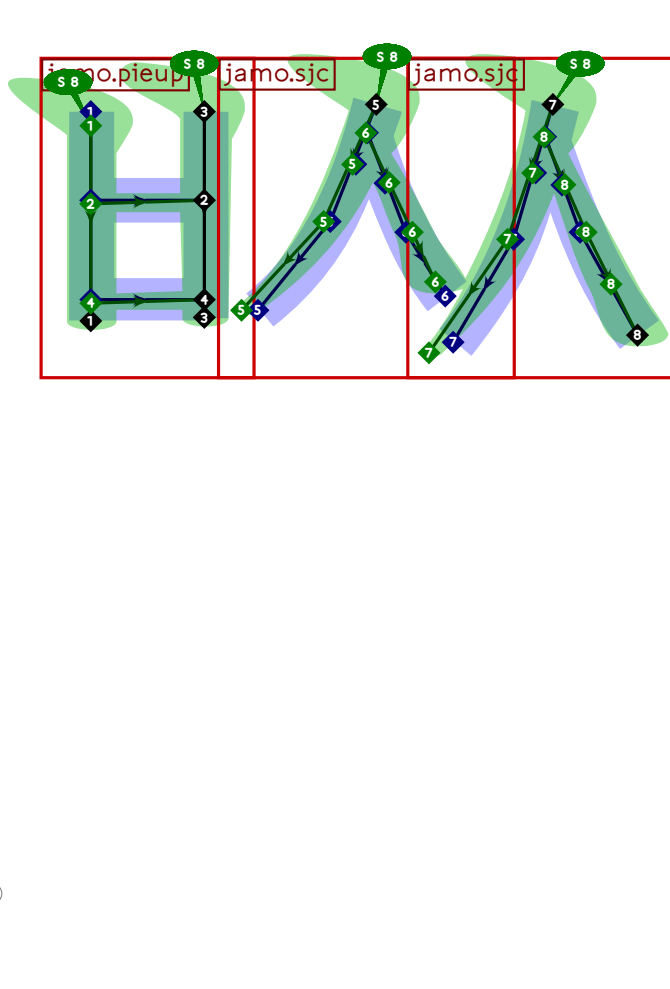



```

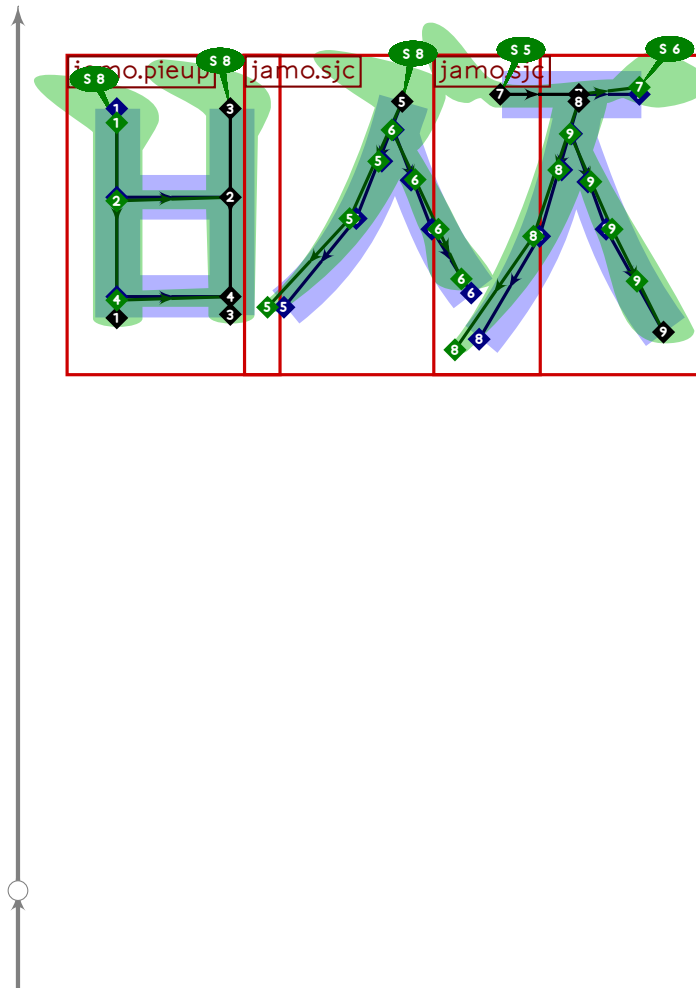
284 % hangul lead pieup-sios-pieup
285 begintsuglyph("uni1124";36);
286   hangul.combine.lcr(107,209,107)(whatever,lixf,loxf);
287   tsu_render;
288 endtsuglyph;
289

```

U+1125
mande.uni1125



```
290 % hangul lead pieup-ssangsios
291 begint Suglyph("uni1125",37);
292   hangul.combine.lcr(107,209,109)(whatever,lixf,loxf);
293   tsu_render;
294 endtsuglyph;
295
```

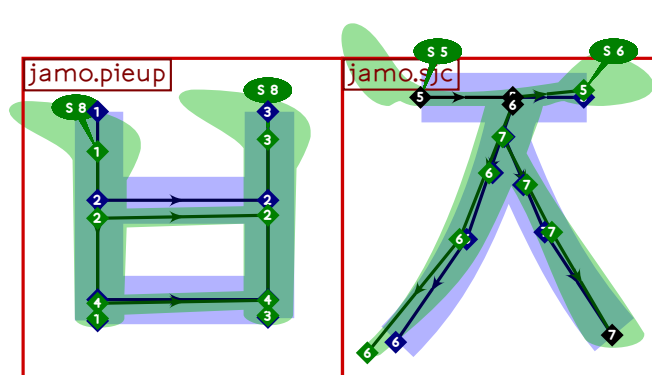


```

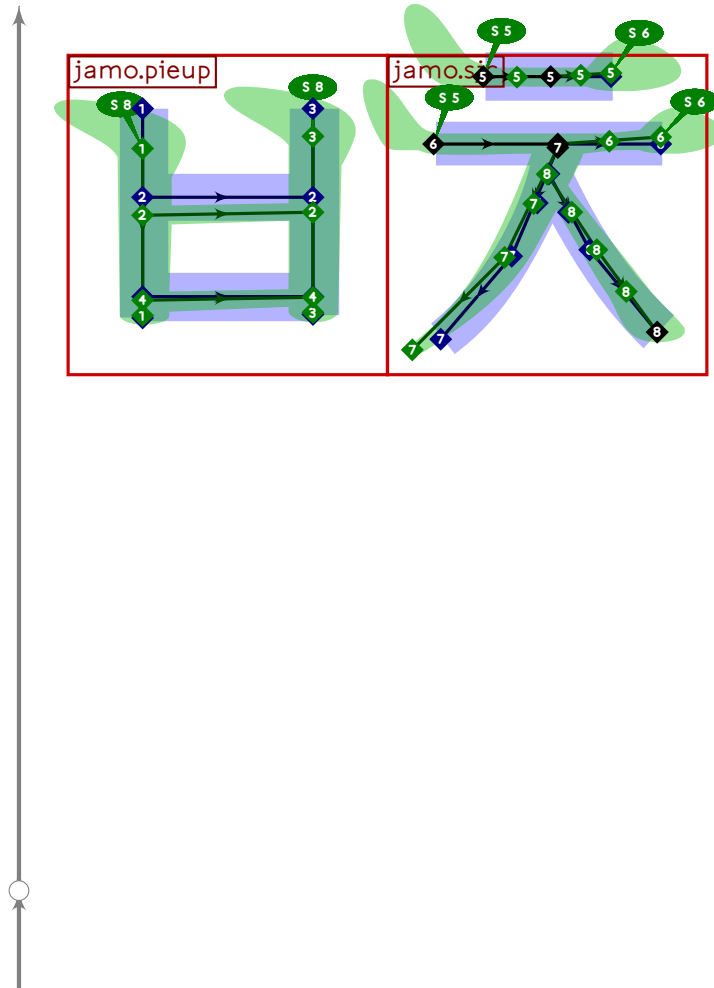
296 % hangul lead pieup-sios-cieuc
297 begint Suglyph("uni1126",38);
298   hangul.combine.lcr(107,209,112)(whatever,lixf,loxf);
299   tsu_render;
300 endtsuglyph;
301

```

U+1127
mande.uni1127



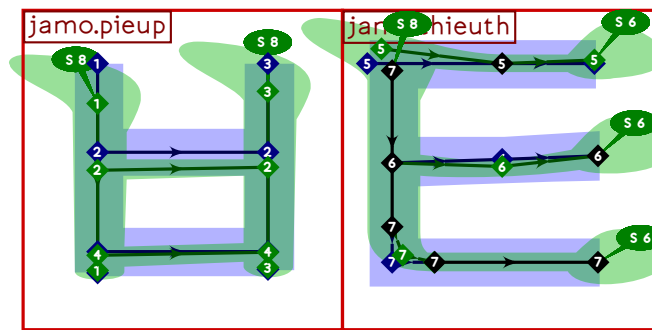
```
302 % hangul lead pieup-cieuc
303 begintsuglyph("uni1127";39);
304 hangul.combine.lr(207,112)(whatever,lixf,loxf);
305 tsu_render;
306 endtsuglyph;
307
```



```

308 % hangul lead pieup-chieuch
309 begintsuglyph("uni1128"40);
310 hangul.combine.lr(207,114)(whatever,lixf,loxf);
311 tsu_render;
312 endtsuglyph;
313

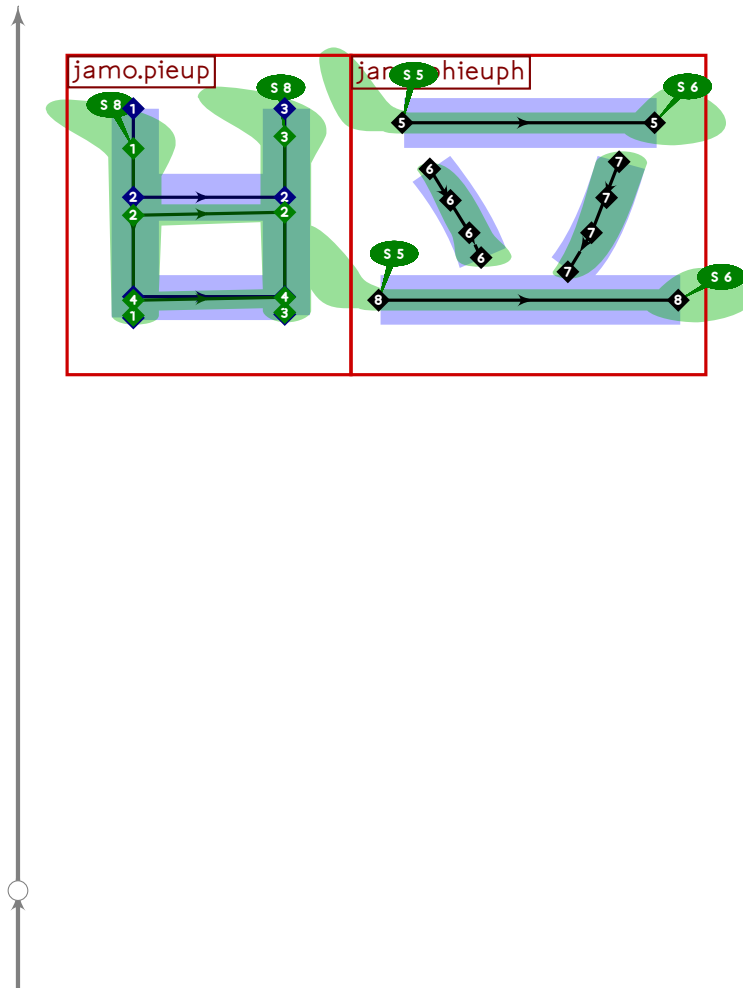
```



```

314 % hangul lead pieup-thieuth
315 begintsuglyph("uni1129";41);
316   hangul.combine.lr(207,116)(whatever,lixf,loxf);
317   tsu_render;
318 endsuglyph;
319

```

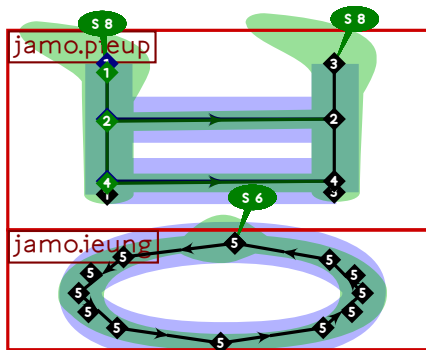


```

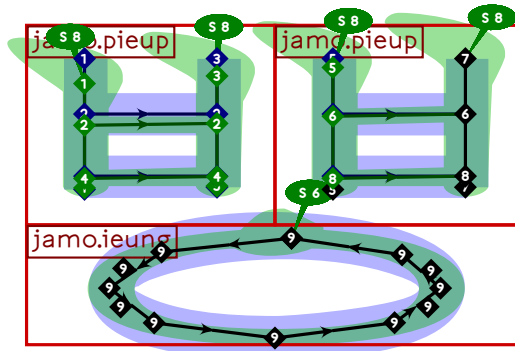
320 % hangul lead pieup-phieup
321 begintsuglyph("uni112A",42);
322   hangul.combine.lr(207,117)(whatever,lixf,loxf);
323   tsu_render;
324 endtsuglyph;
325

```

U+112B
mande.uni112B



```
326 % hangul lead kapyeounpieup
327 begintsuglyph("uni112B"43);
328   hangul.combine.tb(107,521)(whatever,
329     hxf((200,850),(800,-50)) transformed lixf,loxf);
330   tsu_render;
331 endtsuglyph;
332
```

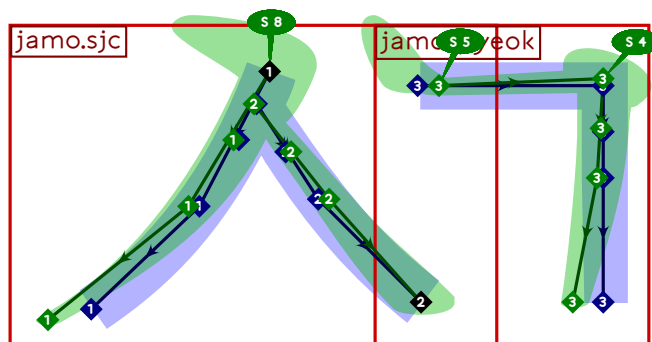



```

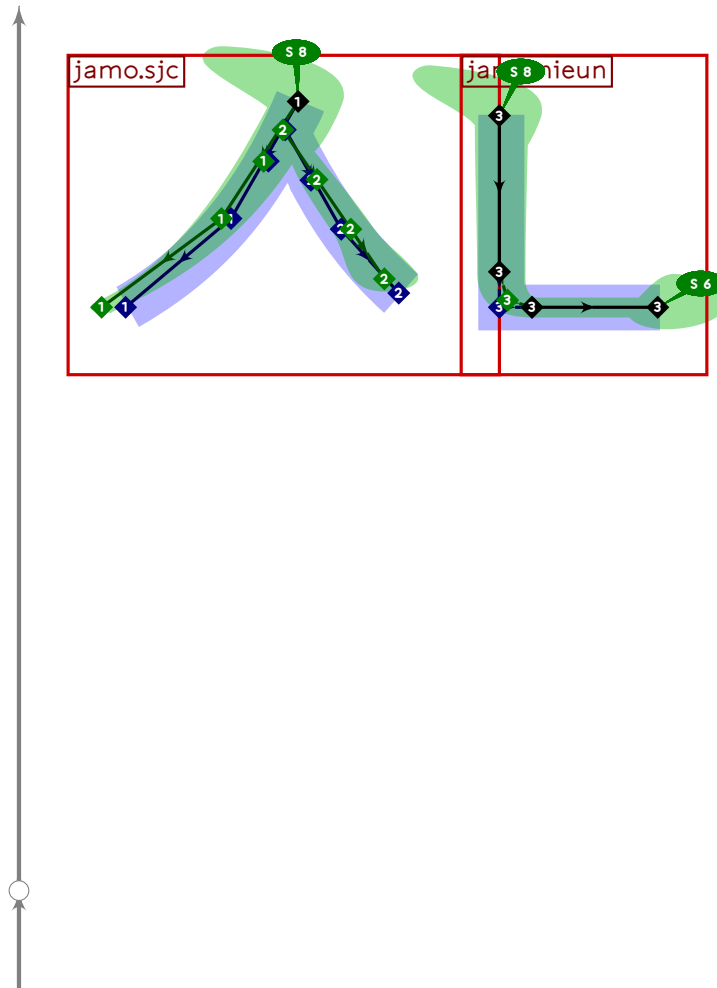
333 % hangul lead kapyeounssangpieup
334 begintsuglyph("uni112C";44);
335   hangul.combine.tb(108,521)(whatever,
336     hxf((150,850),(850,-50)) transformed lixf,loxf);
337   tsu_render;
338 endtsuglyph;
339

```

U+112D
mande.uni112D



```
340 % hangul lead sios-kiyeok
341 begint Suglyph("uni112D",45);
342   hangul.combine.lr(109,100)(whatever,lxf,loxf);
343   tsu_render;
344 endtsuglyph;
345
```

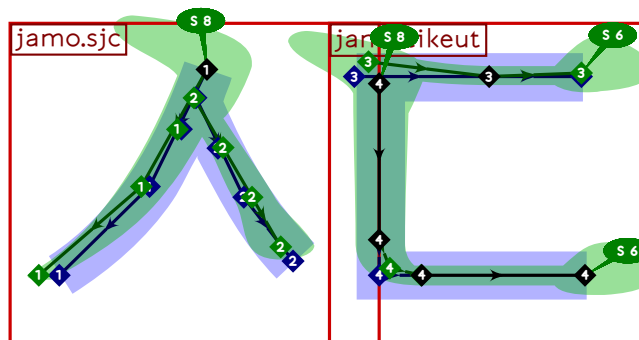


```

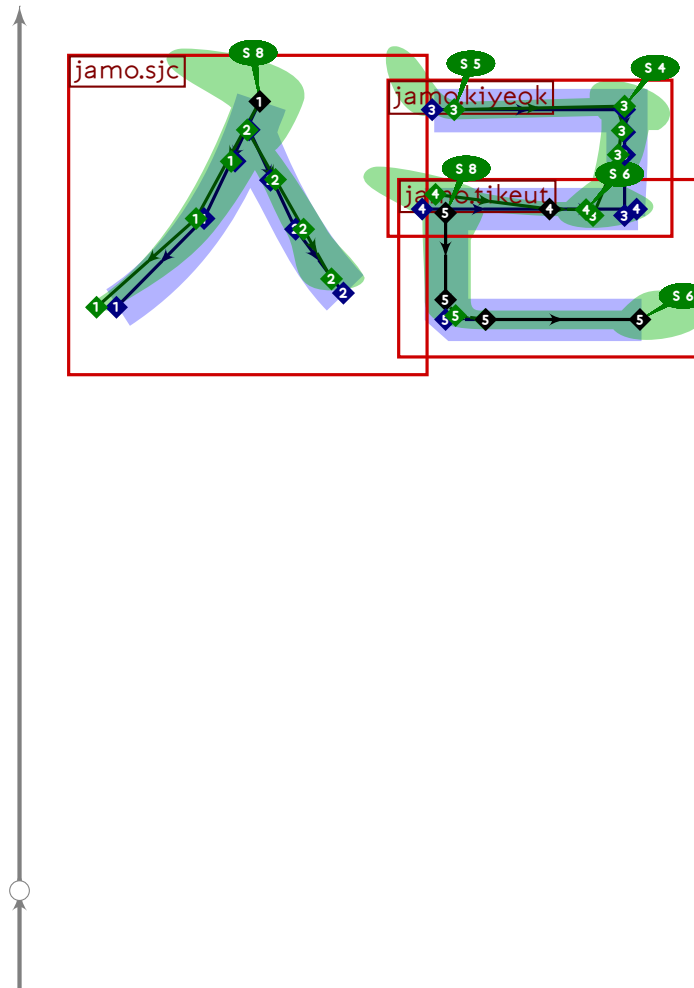
346 % hangul lead sios-nieun
347 begintsuglyph("uni112E"46);
348   hangul.combine.lr(209,102)(whatever,lixf,loxf);
349   tsu_render;
350 endtsuglyph;
351

```

U+112F
mande.uni112F



```
352 % hangul lead sios-tikeut
353 begintsuglyph("uni112F"47);
354 hangul.combine.lr(209,103)(whatever,lixf,loxf);
355 tsu_render;
356 endtsuglyph;
357
```

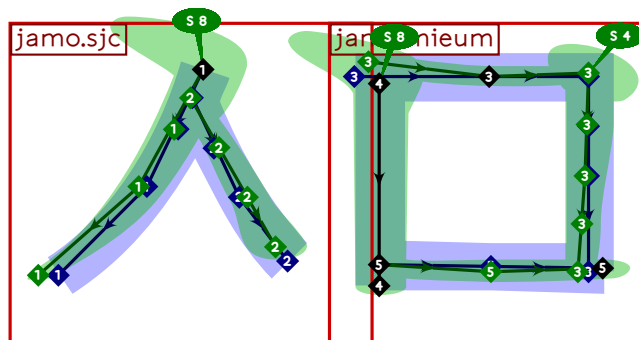


```

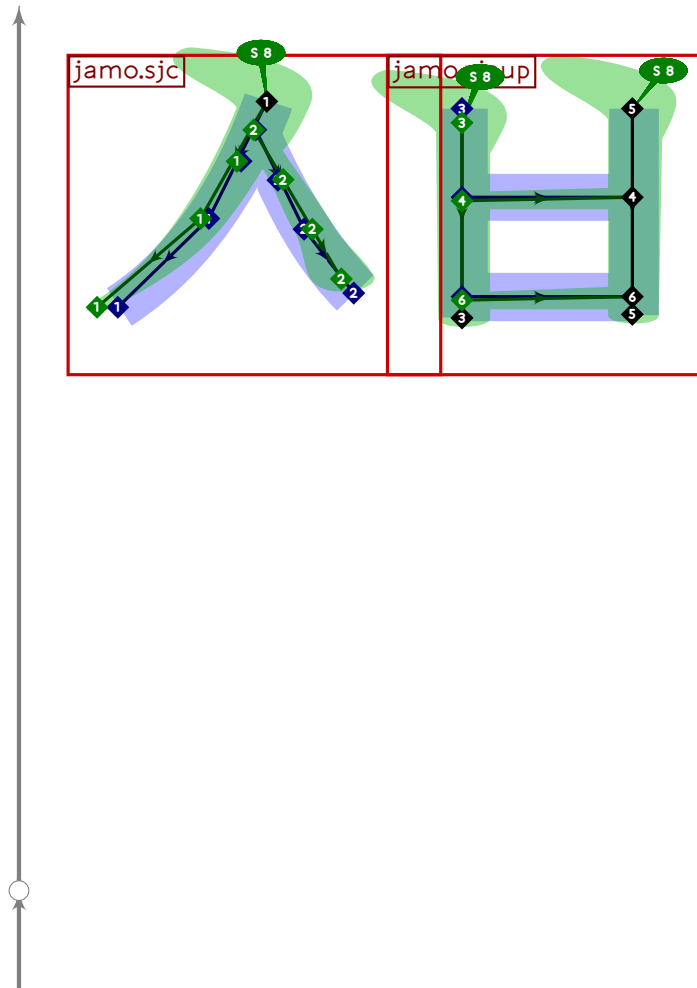
358 % hangul lead sios-rieul
359 begint Suglyph("uni1130"48);
360   hangul.combine.lr(209,105)(whatever,lixf,loxf);
361   tsu_render;
362 endtsuglyph;
363

```

U+1131
mande.uni1131



```
364 % hangul lead sios-mieum
365 begintsuglyph("uni1131";49);
366 hangul.combine.lr(209;106)(whatever,lixf,loxf);
367 tsu_render;
368 endtsuglyph;
369
```

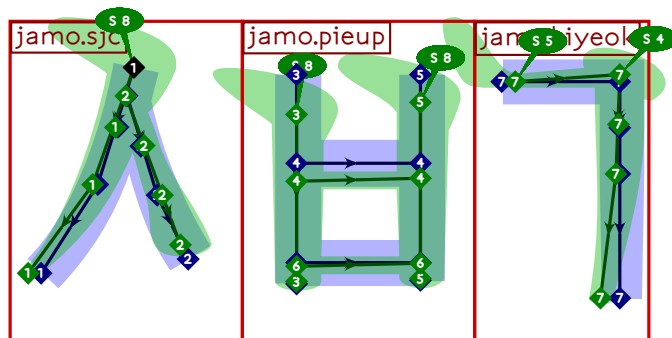


```

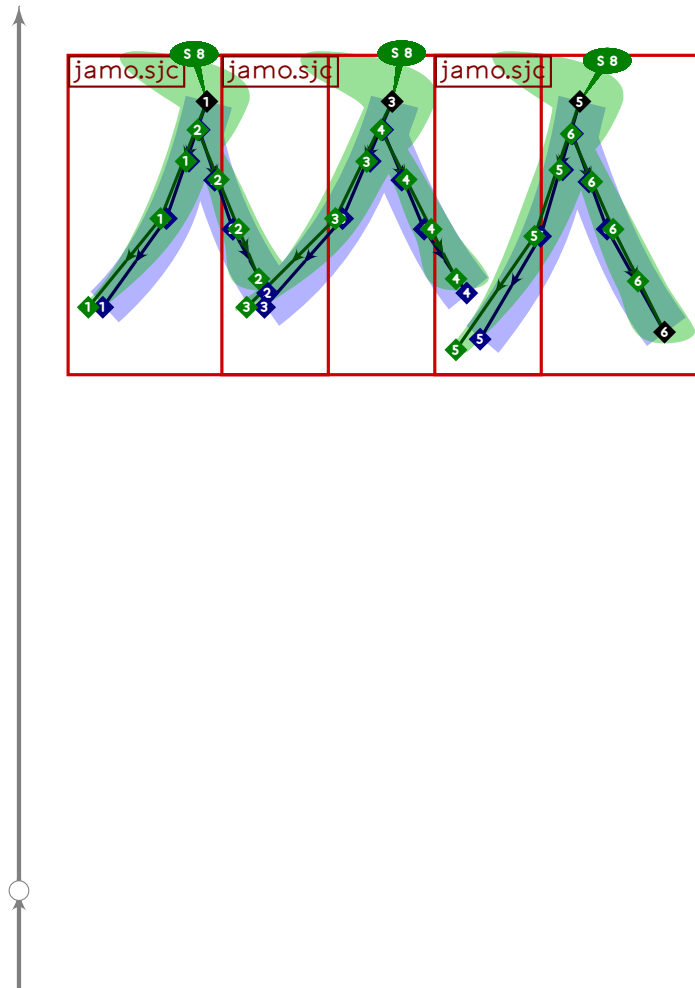
370 % hangul lead sios-pieup
371 begint Suglyph("uni1132";50);
372   hangul.combine.lr(209,107)(whatever,lixf,loxf);
373   tsu_render;
374 endtsuglyph;
375

```

U+1133
mande.uni1133



```
376 % hangul lead sios-pieup-kiyeok
377 begint Suglyph("uni1133",51);
378 hangul.combine.lcr(209,207,100)(whatever,lixf,loxf);
379 tsu_render;
380 endtsuglyph;
381
```

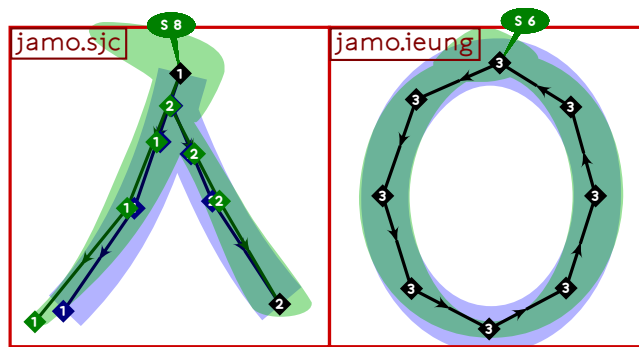



```

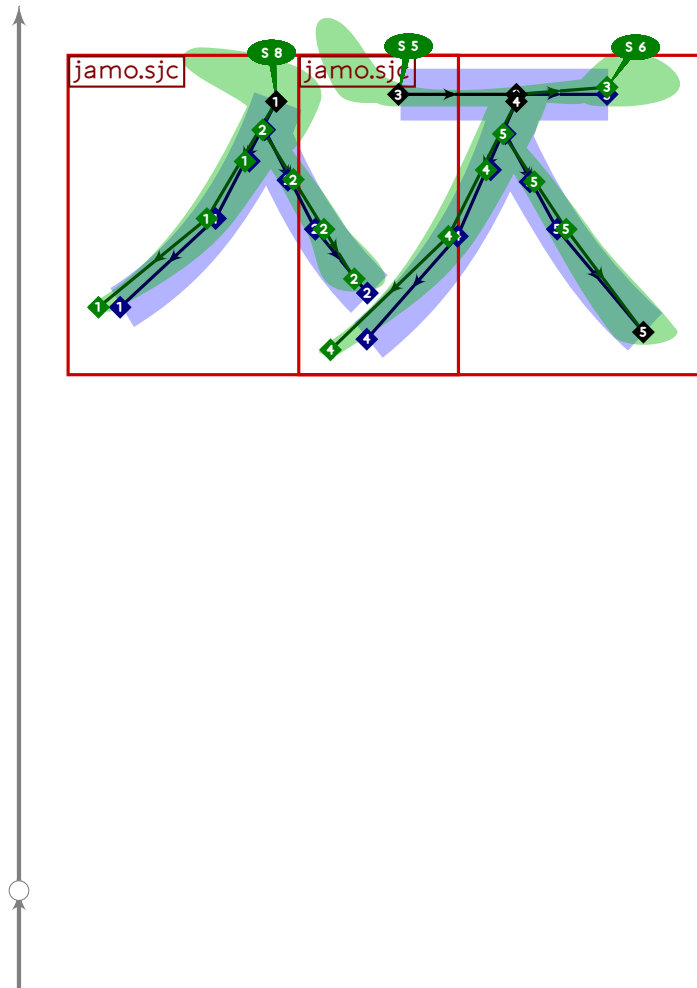
382 % hangul lead sios-sios-sios
383 begintsuglyph("uni1134",52);
384   hangul.combine.lcr(209,209,109)(whatever,lixf,loxf);
385   tsu_render;
386 endtsuglyph;
387

```

U+1135
mande.uni1135



```
388 % hangul lead sios-ieung
389 begintsuglyph("uni1135",53);
390 hangul.combine.lr(109,111)(whatever,lixf,loxf);
391 tsu_render;
392 endtsuglyph;
393
```

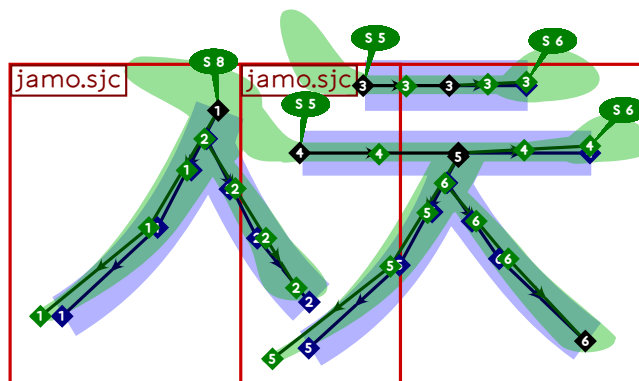


```

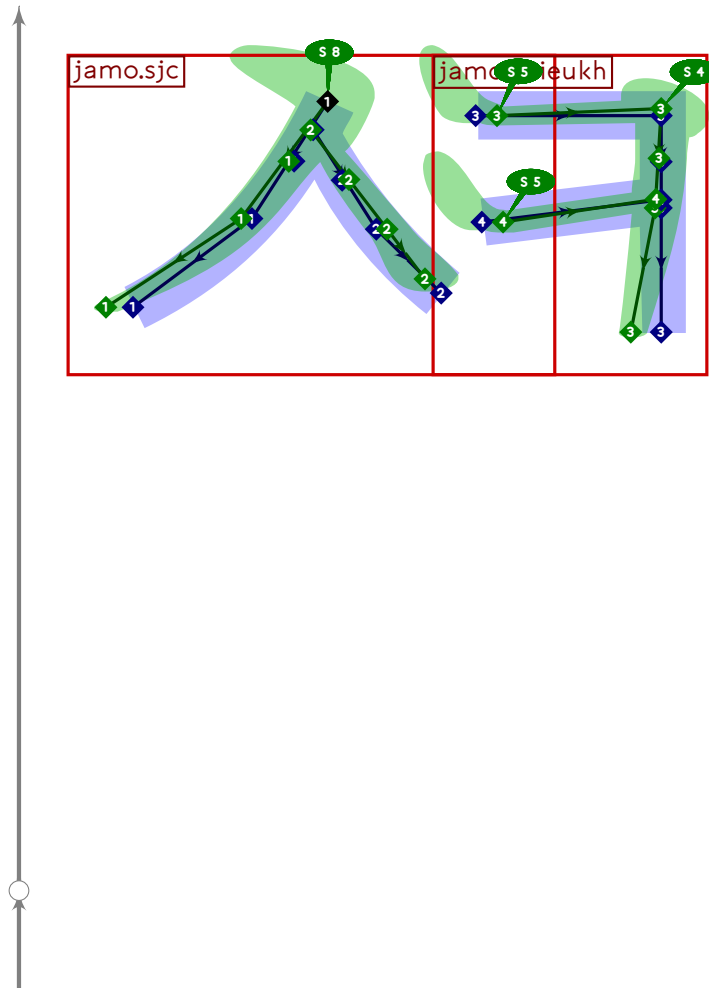
394 % hangul lead sios-cieuc
395 begintsuglyph("uni1136",54);
396   hangul.combine.lr(209,112)(whatever,lixf,loxf);
397   tsu_render;
398 endtsuglyph;
399

```

U+1137
mande.uni1137



```
400 % hangul lead sios-chieuch
401 begintsuglyph("uni1137";55);
402   hangul.combine.lr(209,114)(whatever,lixf,loxf);
403   tsu_render;
404 endtsuglyph;
405
```

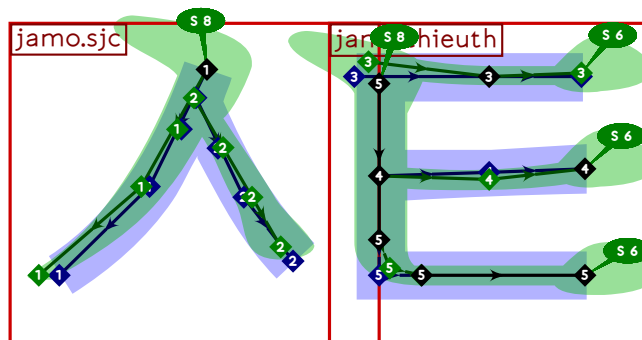


```

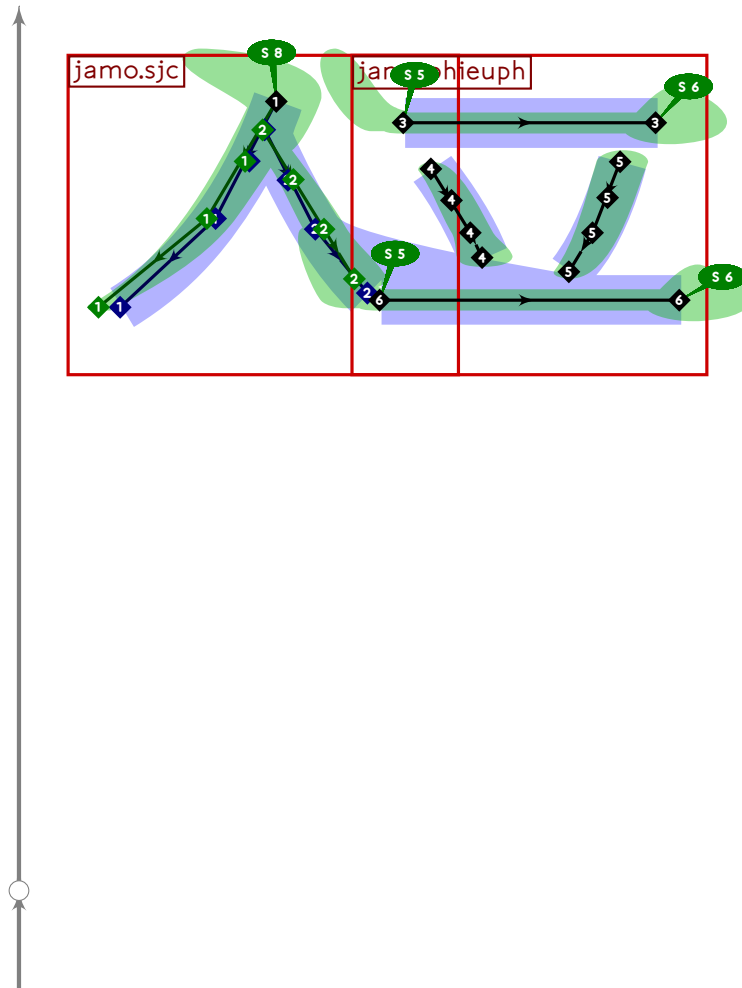
406 % hangul lead sios-khieukh
407 begintsuglyph("uni1138",56);
408   hangul.combine.lr(209,115)(whatever,lixf,loxf);
409   tsu_render;
410 endtsuglyph;
411

```

U+1139
mande.uni1139



```
412 % hangul lead sios-thieuth
413 begint Suglyph("uni1139",57);
414 hangul.combine.lr(209,116)(whatever,lixf,loxf);
415 tsu_render;
416 endtsuglyph;
417
```

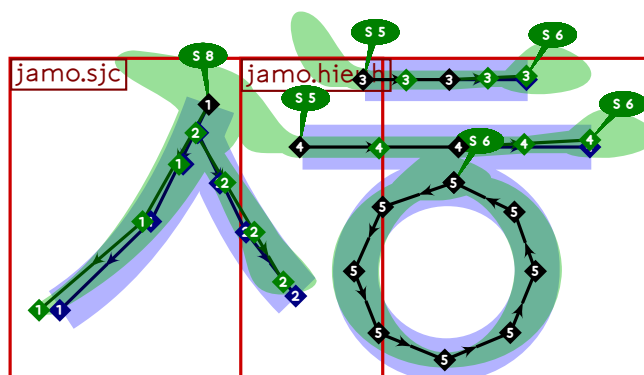


```

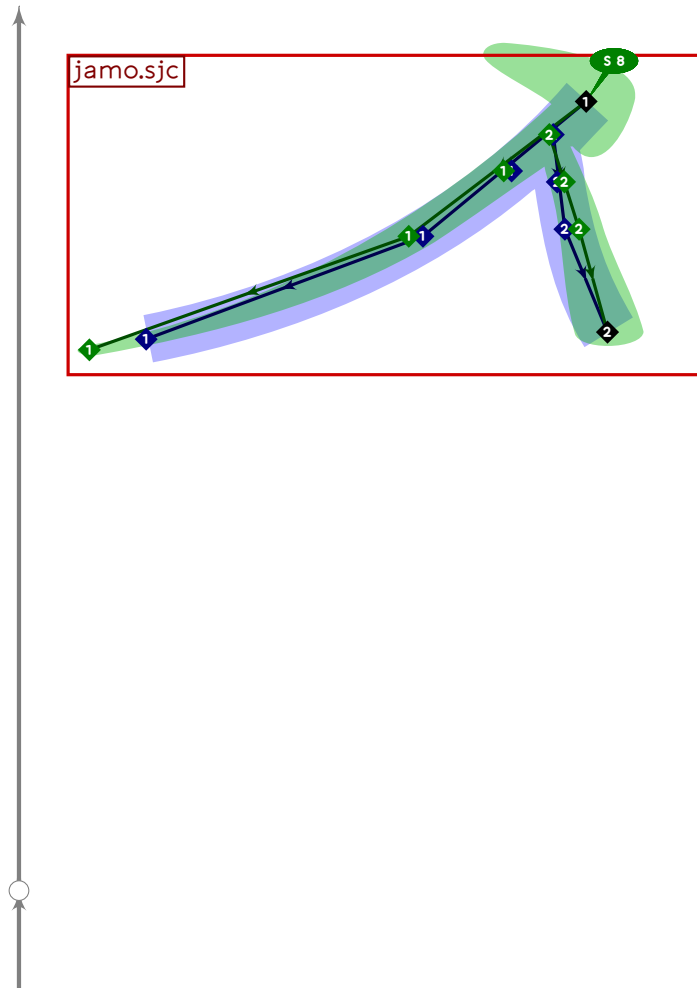
418 % hangul lead sios-phieuph
419 begintsuglyph("uni113A",58);
420 hangul.combine.lr(209,117)(whatever,lixf,loxf);
421 tsu_render;
422 endtsuglyph;
423

```

U+113B
mande.uni113B



```
424 % hangul lead sios-hieuh
425 begintsuglyph("uni113B",59);
426   hangul.combine.lr(209,118)(whatever,lixf,loxf);
427   tsu_render;
428 endtsuglyph;
429
```

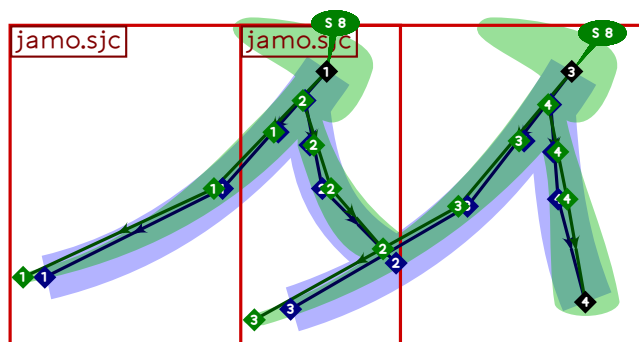



```

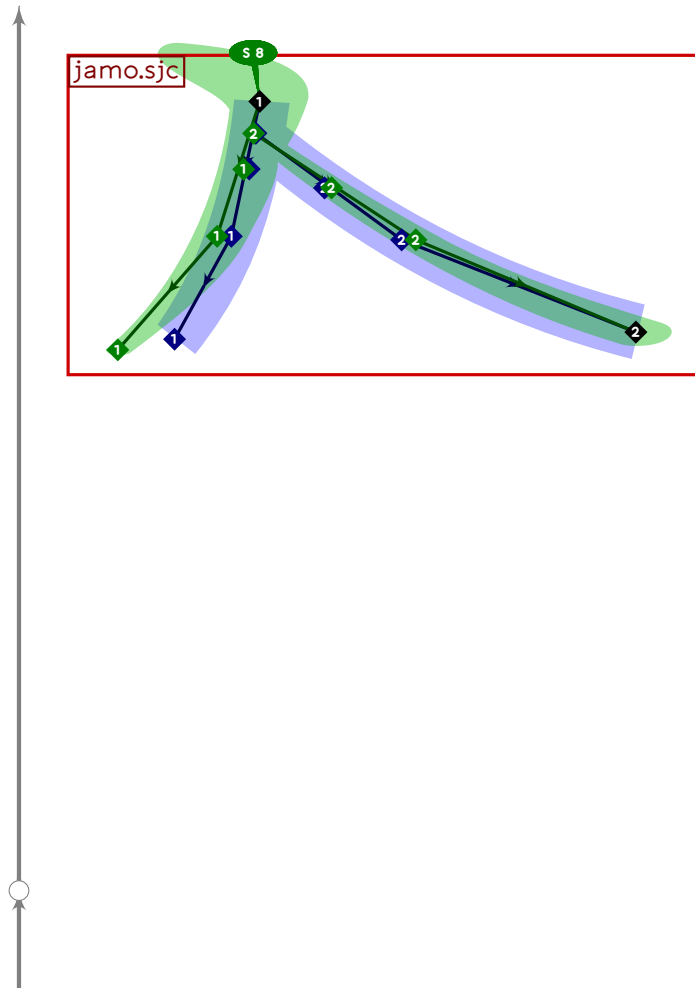
430 % hangul lead chitueumsios
431 begintsuglyph("uni113C",60);
432   hangul.jamo.sjc(0,1,false)(whatever,lixf,loxf);
433   tsu_render;
434 endtsuglyph;
435

```

U+113D
mande.uni113D

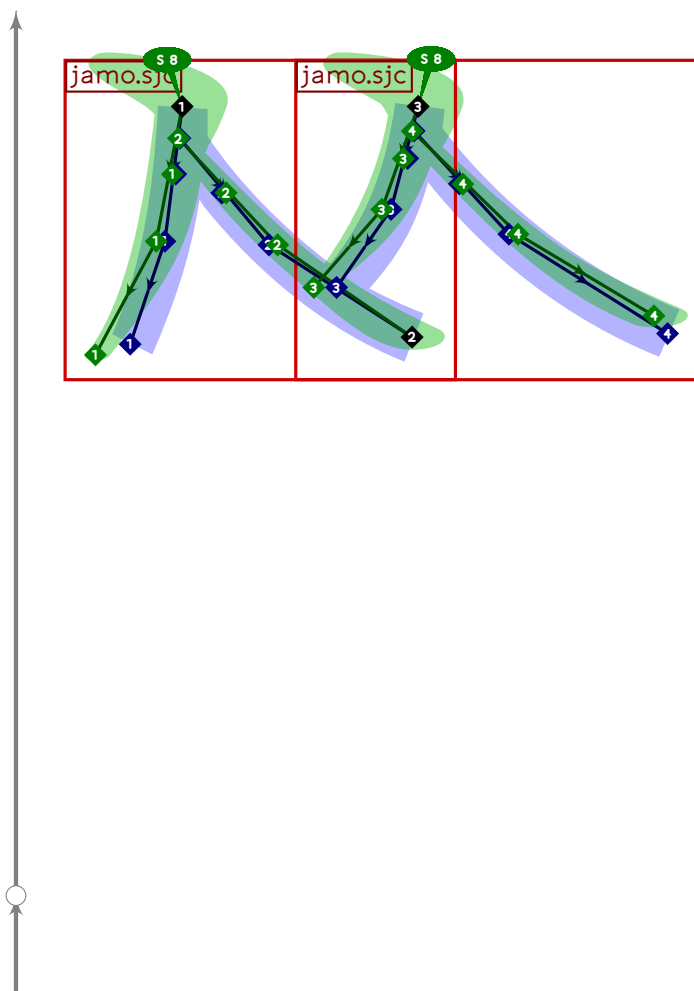


```
436 % hangul lead chitueumssangsios
437 begint Suglyph("uni113D",61);
438   hangul.combine.lr(223,222)(whatever,lixf,loxf);
439   tsu_render;
440 endtsuglyph;
441
```

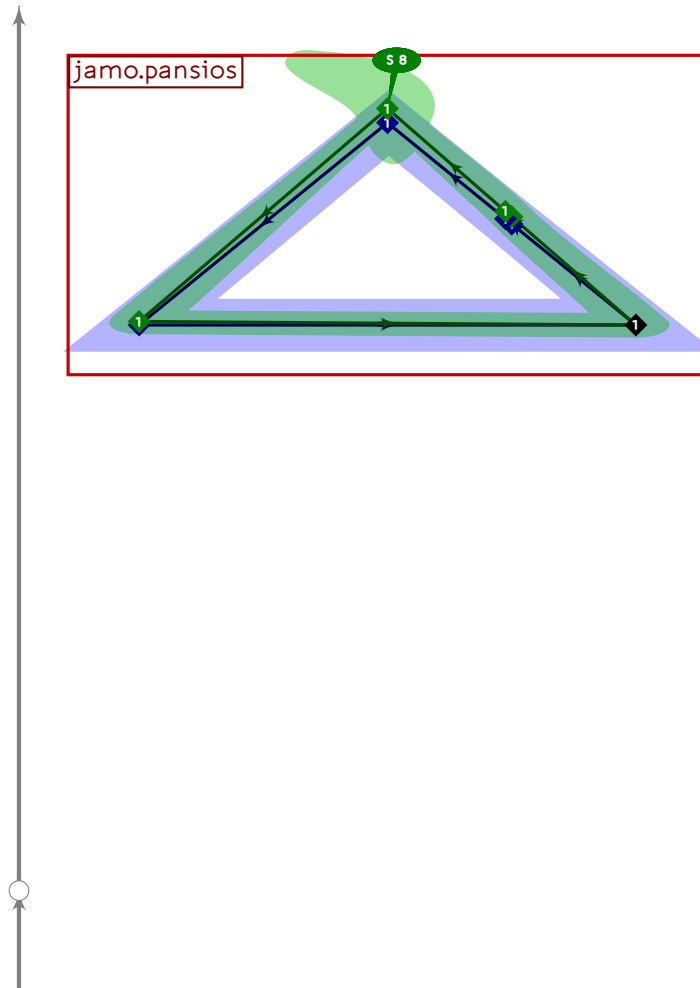


```
442 % hangul lead ceongchieumsios
443 begint Suglyph("uni113E";62);
444   hangul.jamo.sjc(0,-1,false)(whatever,lixf,loxf);
445   tsu_render;
446 endtsuglyph;
447
```

U+113F
mande.uni113F

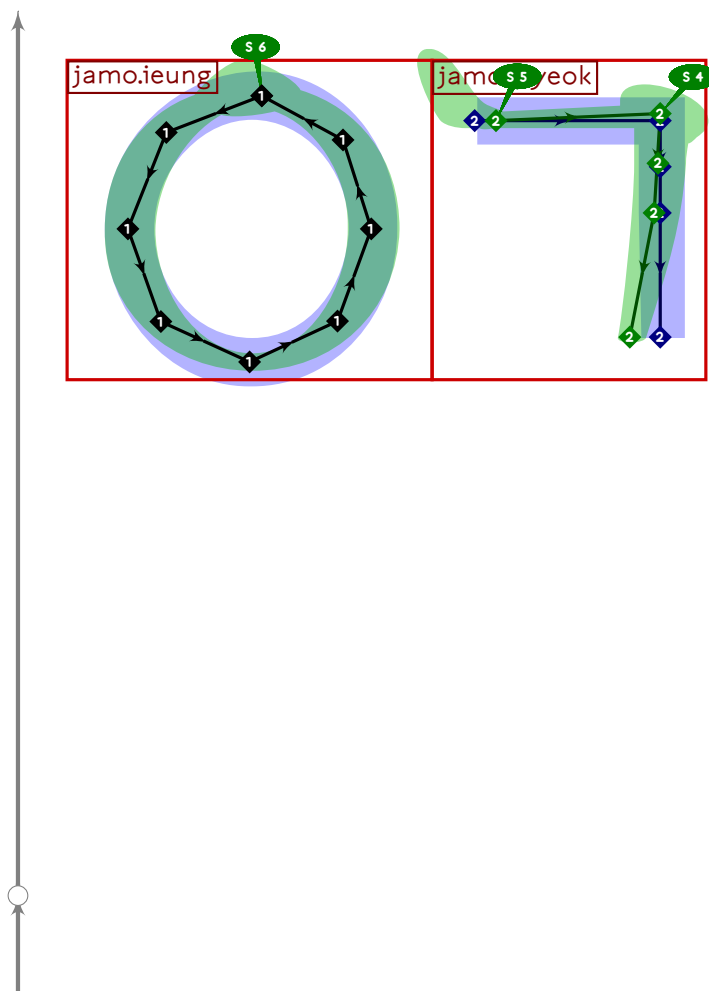


```
448 % hangul lead ceongchieumssangsios
449 begintsuglyph("uni113F";63);
450 hangul.combine.lr(224,225)(whatever,lixf,loxf);
451 tsu_render;
452 endtsuglyph;
453
```

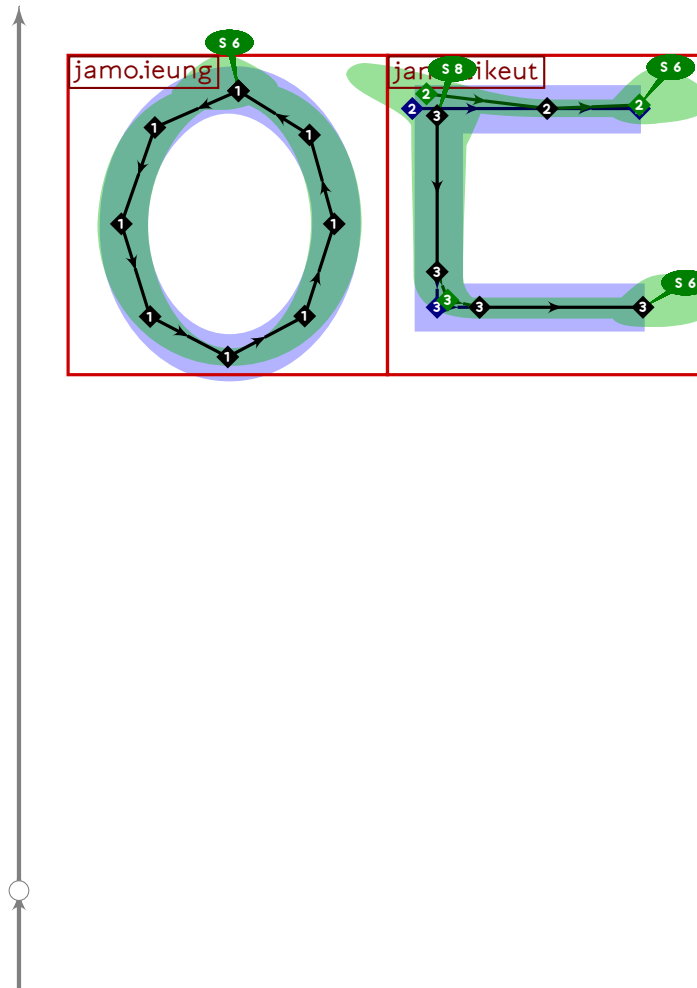


```
454 % hangul lead pansios
455 begint Suglyph("uni1140",64);
456   hangul.jamo.pansios(whatever,lixf,loxf);
457   tsu_render;
458 endtsuglyph;
459
```

U+1141
mande.uni1141



```
460 % hangul lead ieung-kiyeok
461 beginsuglyph("uni1141",65);
462 hangul.combine.lr(111,100)(whatever,lixf,loxf);
463 tsu_render;
464 endsuglyph;
465
```

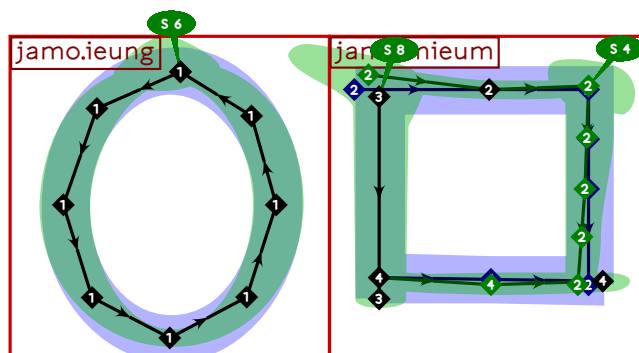


```

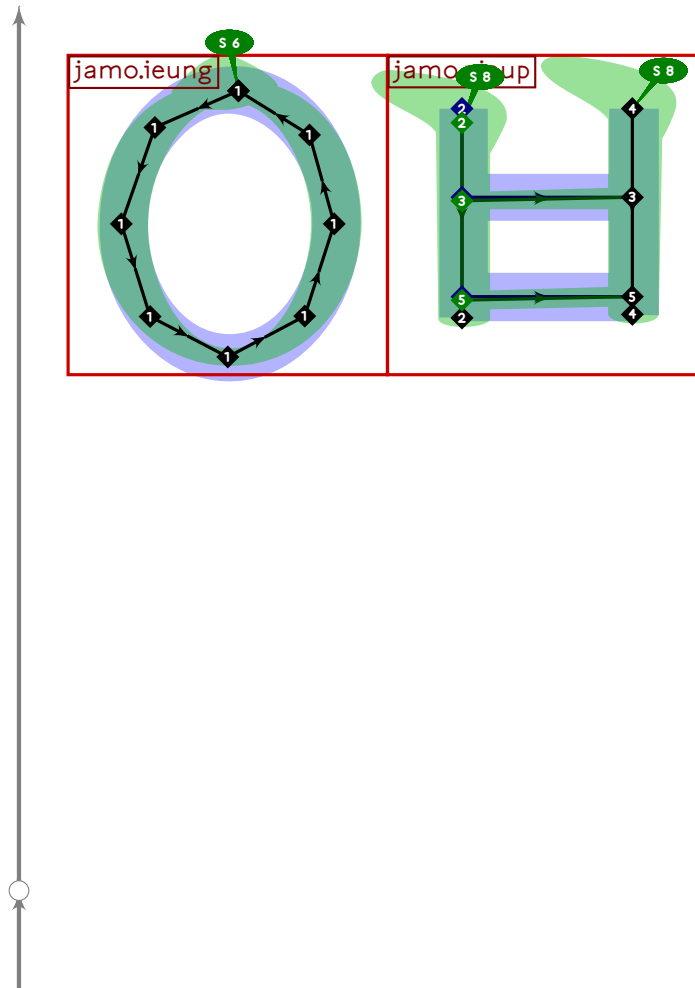
466 % hangul lead ieung-tikeut
467 beginsuglyph("uni1142",66);
468   hangul.combine.lr(111,103)(whatever,lixf,loxf);
469   tsu_render;
470 endsuglyph;
471

```

U+1143
mande.uni1143



```
472 % hangul lead ieung-mieum
473 beginsuglyph("uni1143",67);
474 hangul.combine.lr(111,106)(whatever,lixf,loxf);
475 tsu_render;
476 endsuglyph;
477
```

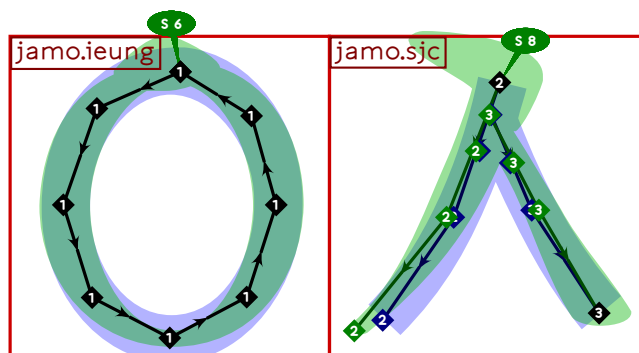



```

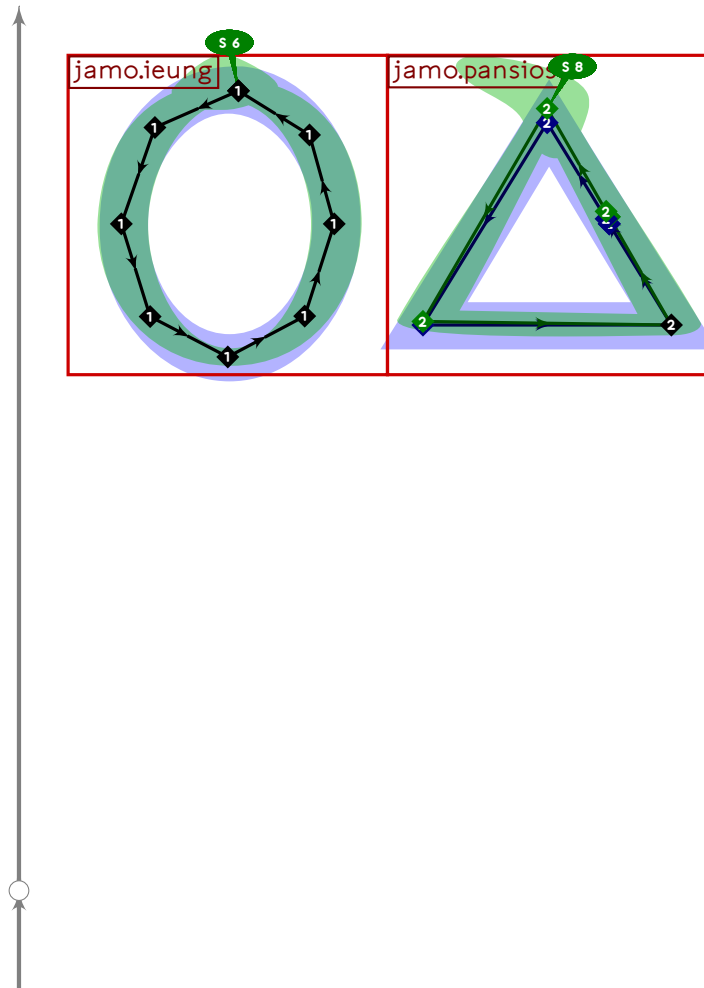
478 % hangul lead ieung-pieup
479 begintsuglyph("uni1144",68);
480 hangul.combine.lr(111,107)(whatever,lixf,loxf);
481 tsu_render;
482 endtsuglyph;
483

```

U+1145
mande.uni1145



```
484 % hangul lead ieung-sios
485 begintsuglyph("uni1145",69);
486 hangul.combine.lr(111,109)(whatever,lixf,loxf);
487 tsu_render;
488 endtsuglyph;
489
```

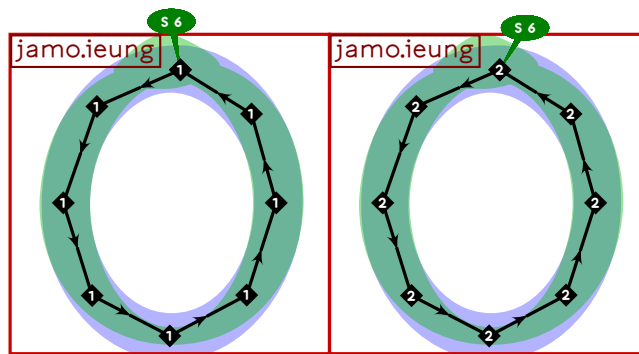


```

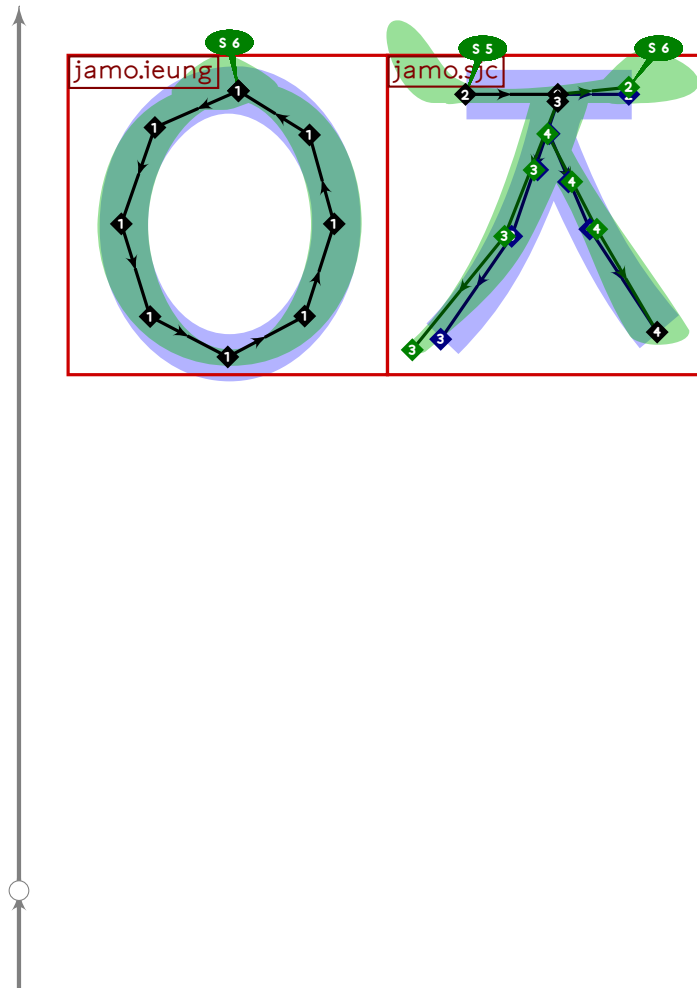
490 % hangul lead ieung-pansios
491 begint Suglyph("uni1146",70);
492   hangul.combine.lr(111,219)(whatever,lixf,loxf);
493   tsu_render;
494 endtsuglyph;
495

```

U+1147
mande.uni1147



```
496 % hangul lead ssangieung
497 begintsuglyph("uni1147";71);
498 hangul.combine.lr(111,111)(whatever,lixf,loxf);
499 tsu_render;
500 endtsuglyph;
501
```

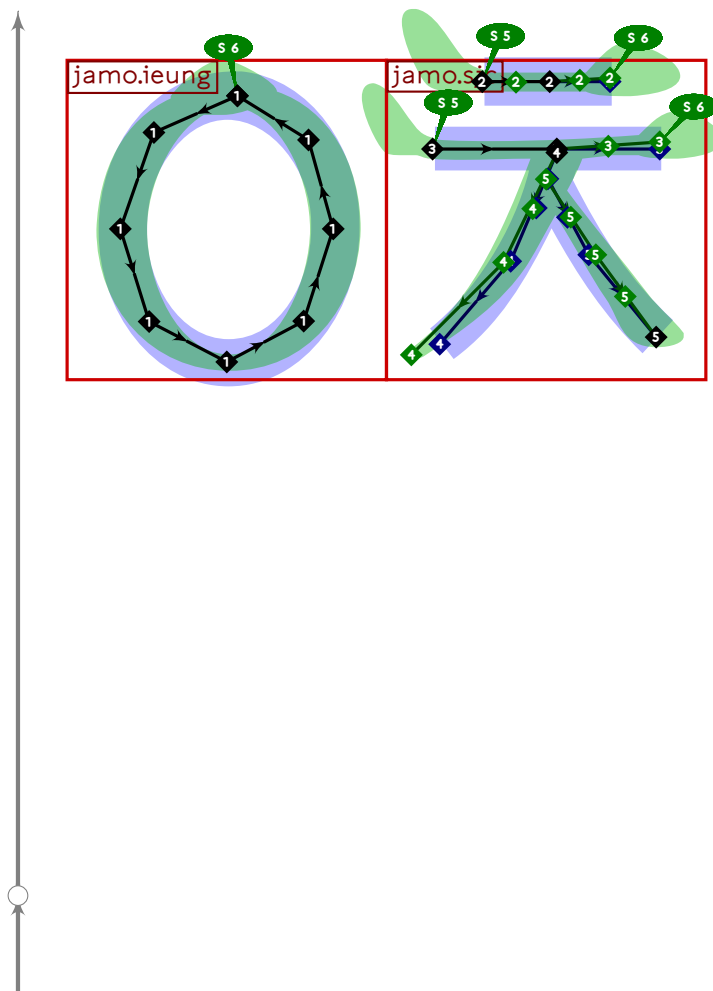


```

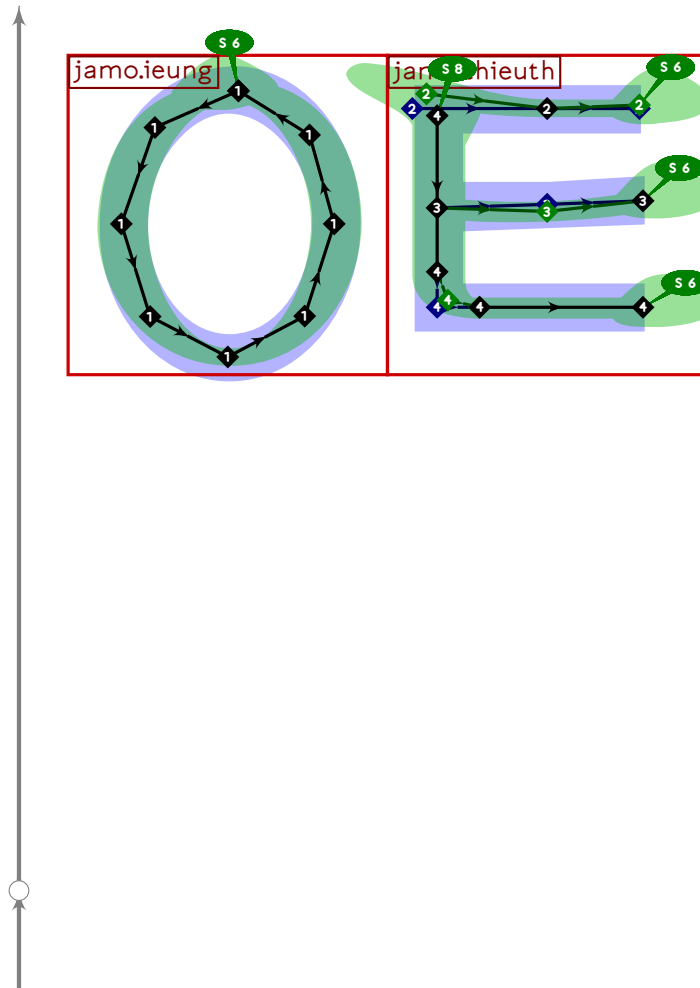
502 % hangul lead ieung-cieuc
503 begintsuglyph("uni1148",72);
504   hangul.combine.lr(111,112)(whatever,lixf,loxf);
505   tsu_render;
506 endtsuglyph;
507

```

U+1149
mande.uni1149



```
508 % hangul lead ieung-chieuch
509 begint Suglyph("uni1149",73);
510 hangul.combine.lr(111,114)(whatever,lixf,loxf);
511 tsu_render;
512 endtsuglyph;
513
```

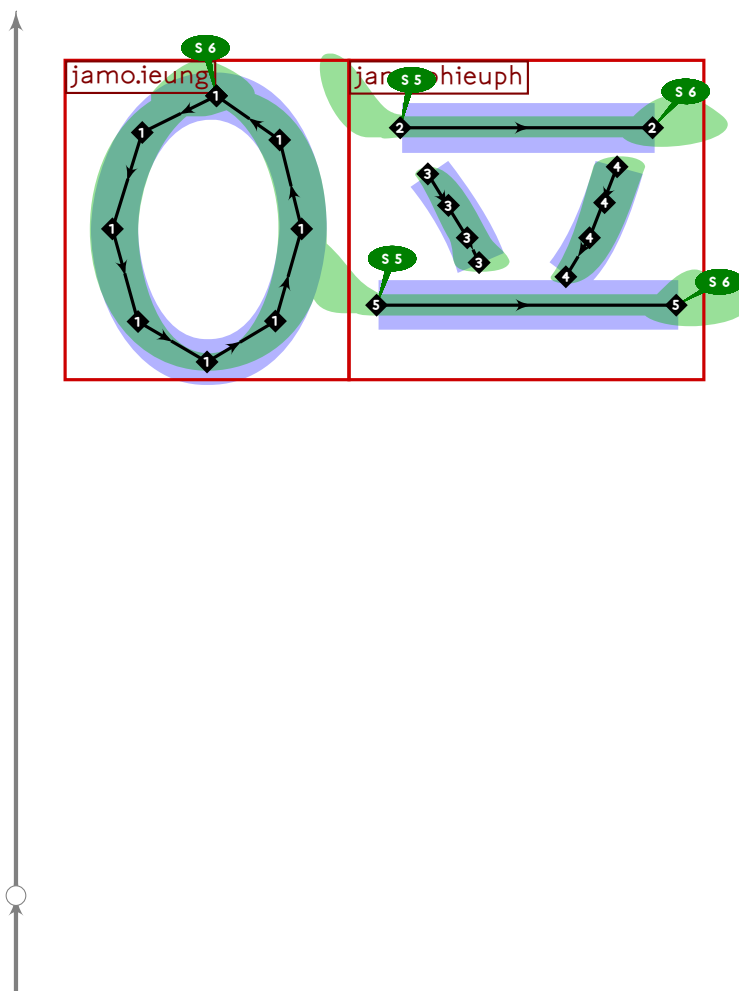


```

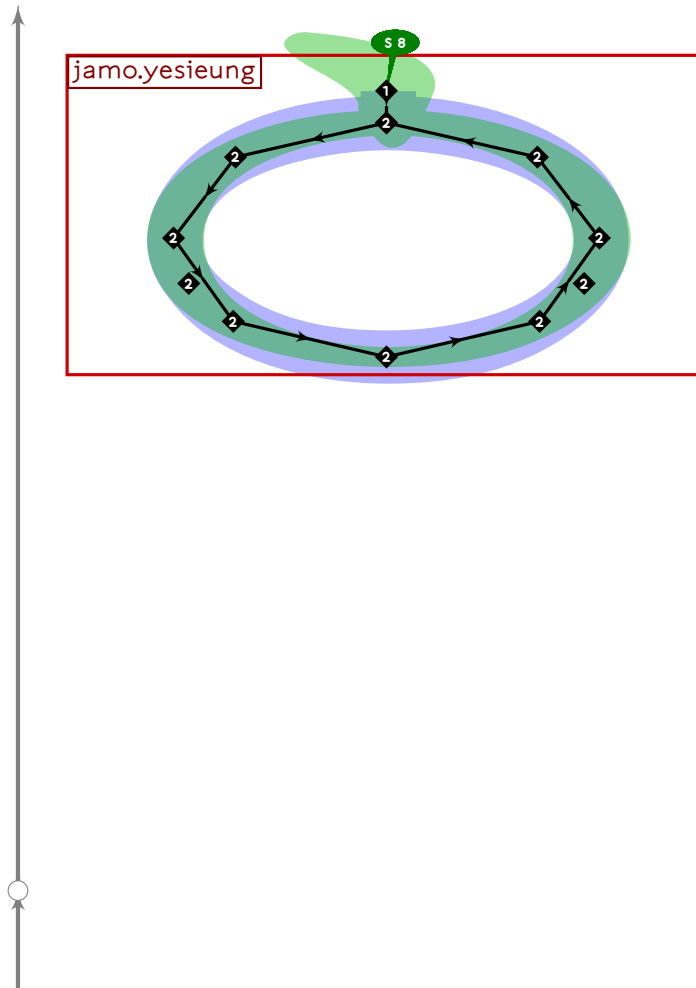
514 % hangul lead ieung-theiuth
515 begintsuglyph("uni114A",74);
516   hangul.combine.lr(111,116)(whatever,lixf,loxf);
517   tsu_render;
518 endtsuglyph;
519

```

U+114B
mande.uni114B

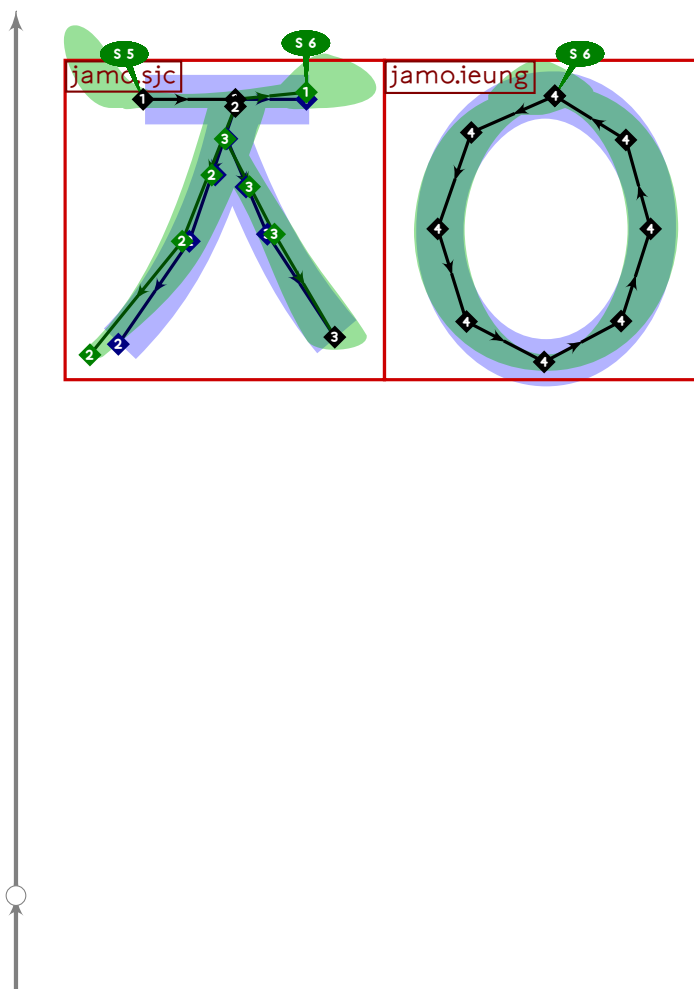


```
520 % hangul lead ieung-phieuph
521 begintsuglyph("uni114B",75);
522 hangul.combine.lr(111,117)(whatever,lixf,loxf);
523 tsu_render;
524 endtsuglyph;
525
```

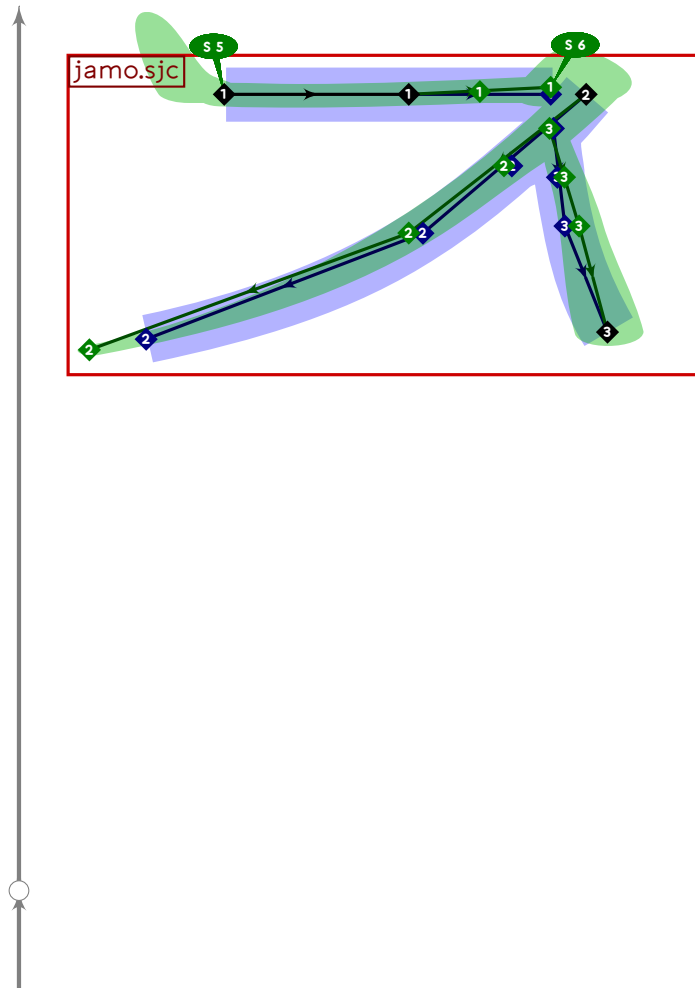



```
526 % hangul lead yesieung
527 begintsuglyph("uni114C",76);
528   hangul.jamo.yesieung(whatever,lixf,loxf);
529   tsu_render;
530 endsuglyph;
531
```

U+114D
mande.uni114D



```
532 % hangul lead cieuc-ieung
533 beginsuglyph("uni114D";77);
534 hangul.combine.lr(112,111)(whatever,lixf,loxf);
535 tsu_render;
536 endtsuglyph;
537
```

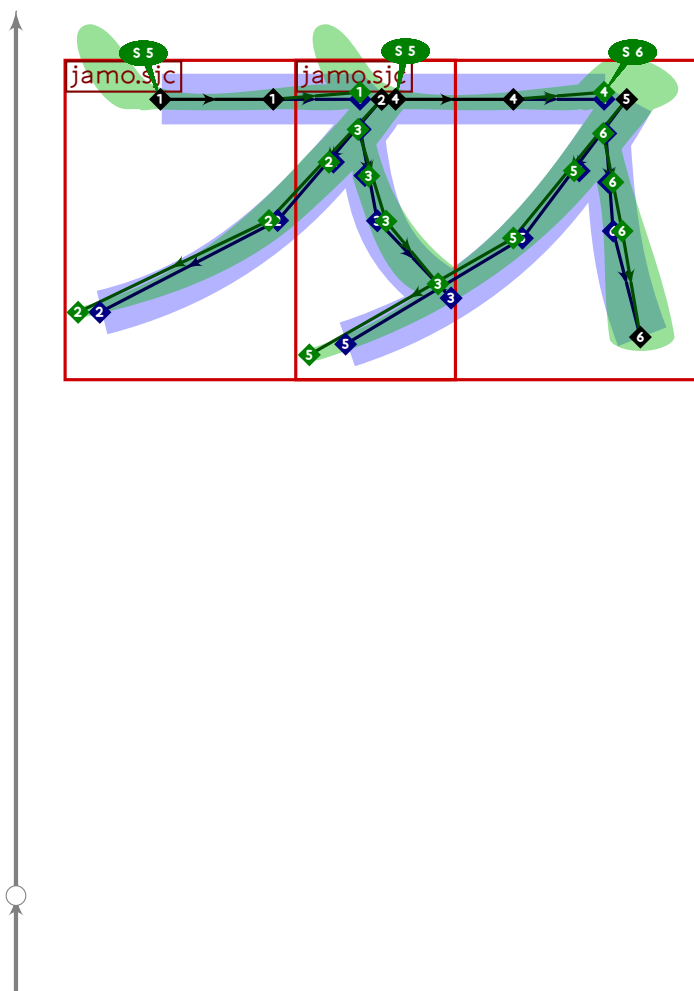


```

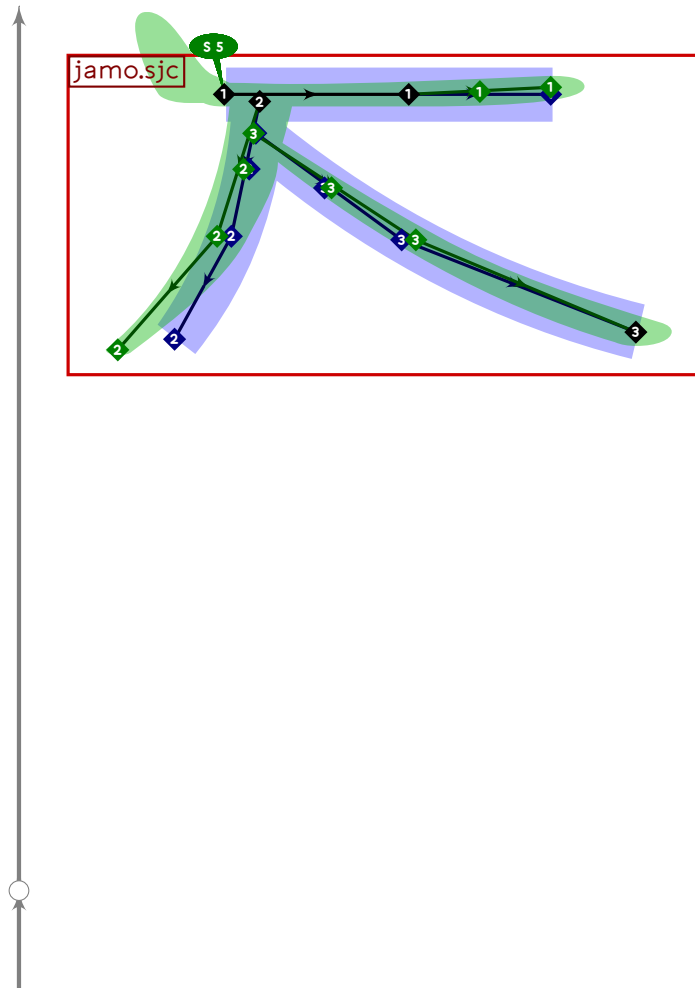
538 % hangul lead chitueumcieuc
539 begintsuglyph("uni114E";78);
540   hangul.jamo.sjc(1,1,false)(whatever,lixf,loxf);
541   tsu_render;
542 endtsuglyph;
543

```

U+114F
mande.uni114F



```
544 % hangul lead chitueumssangcieuc
545 begint Suglyph("uni114F";79);
546   hangul.combine.lr(227,226)(whatever,lixf,loxf);
547   tsu_render;
548 endtsuglyph;
549
```

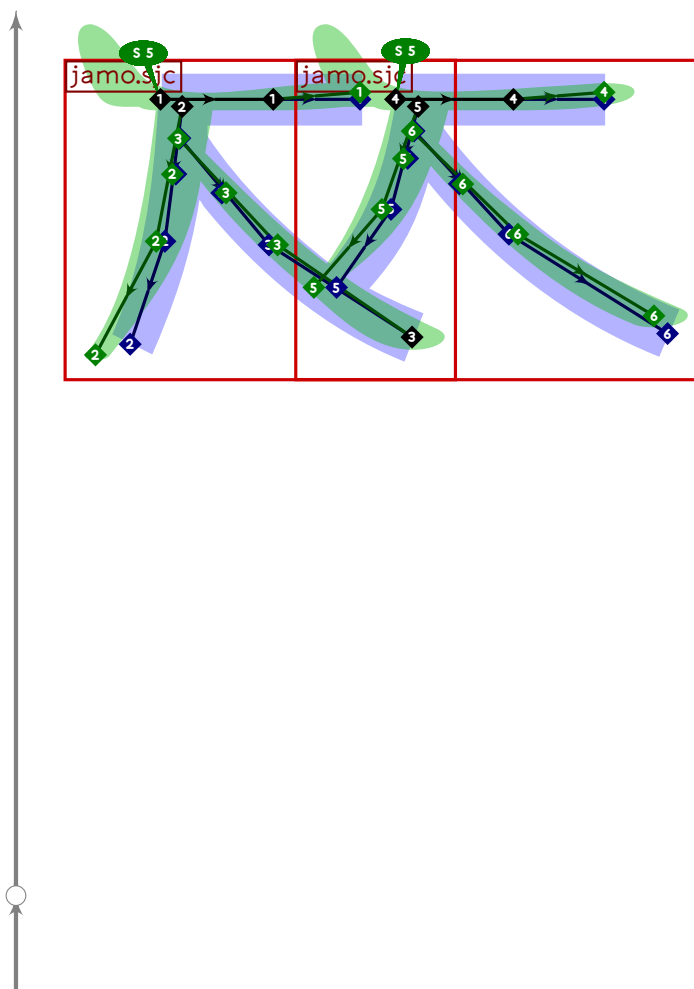


```

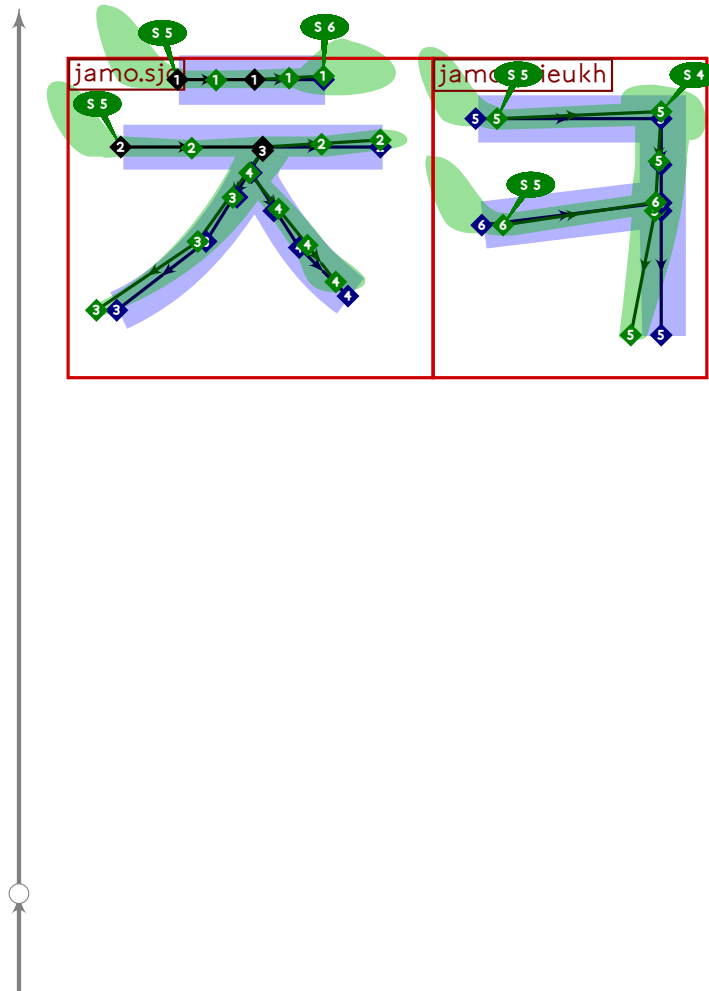
550 % hangul lead ceongchieumcieuc
551 begint Suglyph("uni1150",80);
552   hangul.jamo.sjc(1,-1,false)(whatever,lixf,loxf);
553   tsu_render;
554 endtsuglyph;
555

```

U+1151
mande.uni1151



```
556 % hangul lead ceongchieumssangcieuc
557 begint Suglyph("uni1151";81);
558   hangul.combine.lr(228,229)(whatever,lxf,lxf);
559   tsu_render;
560 endtsuglyph;
561
```

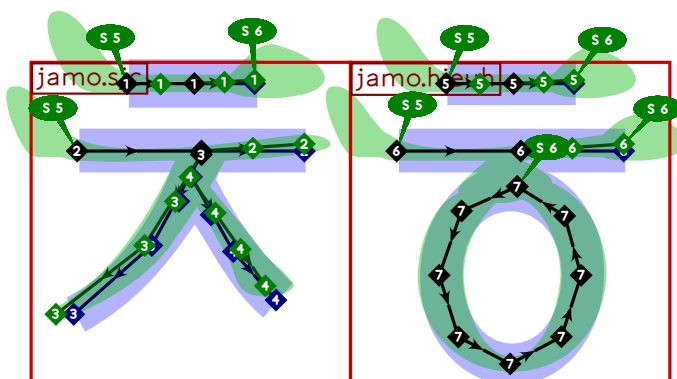


```

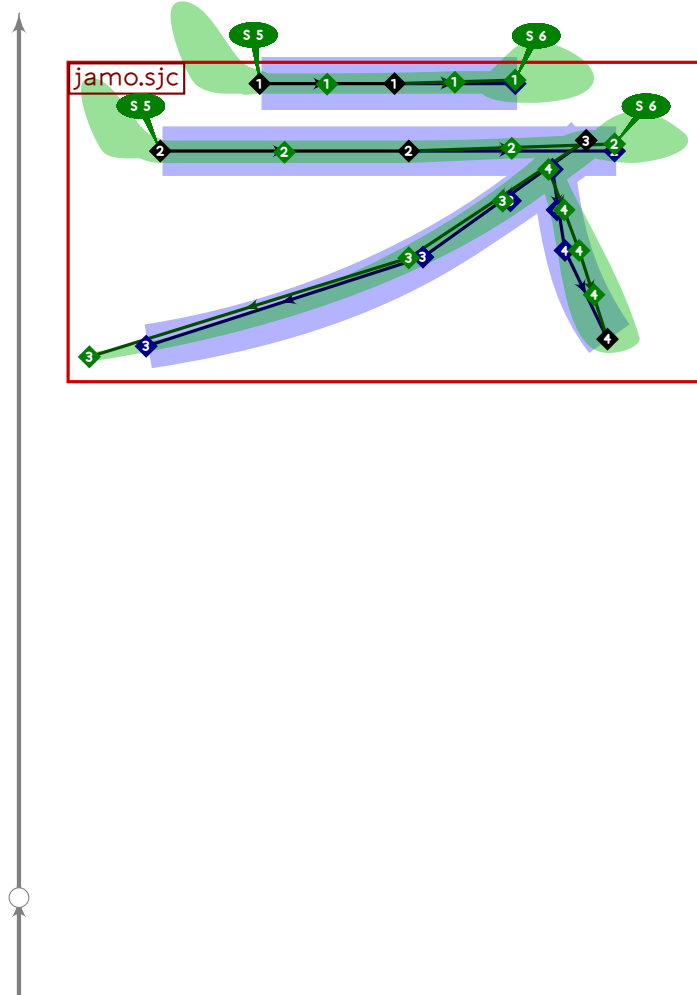
562 % hangul lead chieuch-khieukh
563 begint Suglyph("uni1152";82);
564   hangul.combine.lcr(214,230,115)(whatever,lixf,loxf);
565   tsu_render;
566 endtsuglyph;
567

```

U+1153
mande.uni1153



```
568 % hangul lead chieuch-hieuh
569 begint Suglyph("uni1153",83);
570 hangul.combine.lcr(214,230,118)(whatever,lixf,loxf);
571 tsu_render;
572 endtsuglyph;
573
```

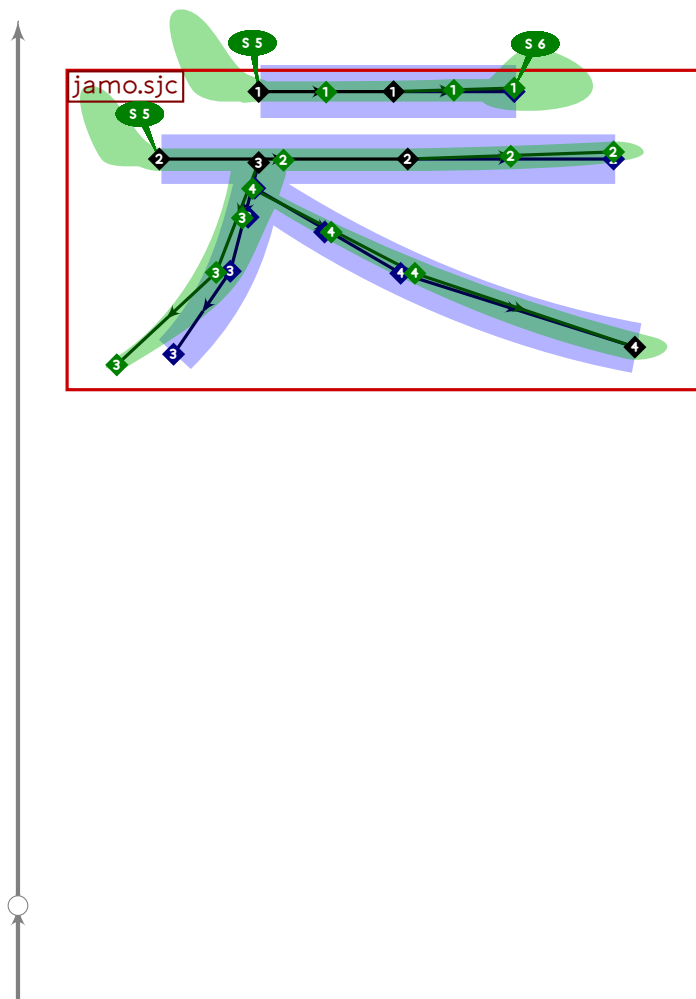



```

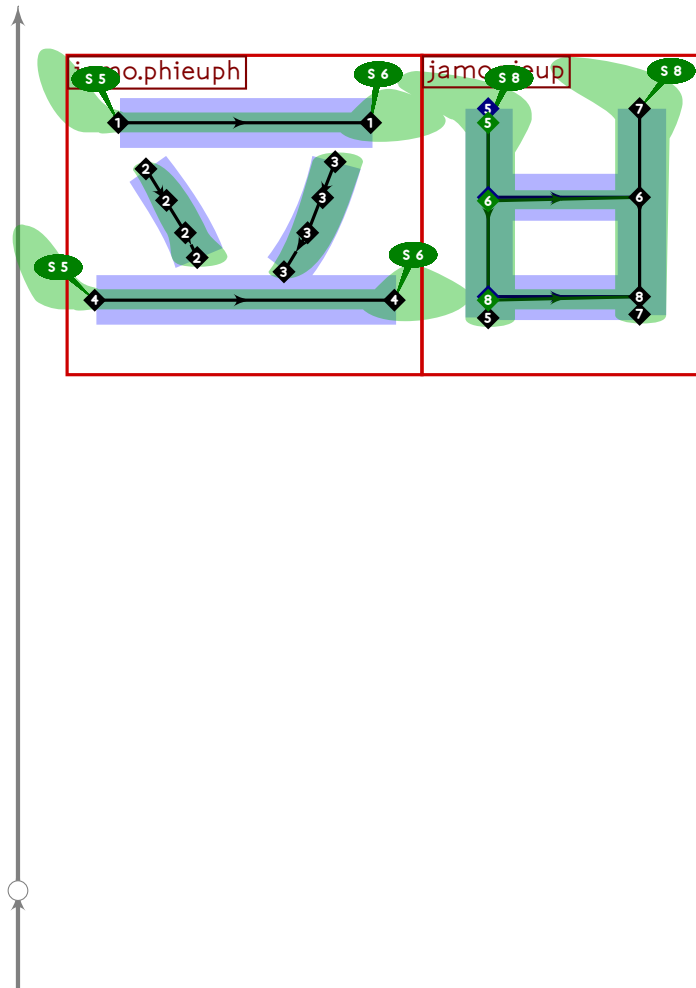
574 % hangul lead chitueumcieuc
575 begint Suglyph("uni1154",84);
576   hangul.jamo.sjc(2,1,false)(whatever,lixf,loxf);
577   tsu_render;
578 endtsuglyph;
579

```

U+1155
mande.uni1155



```
580 % hangul lead ceongchieumcieuc
581 begint Suglyph("uni1155",85);
582   hangul.jamo.sjc(2,-1,false)(whatever,lixf,loxf);
583   tsu_render;
584 endtsuglyph;
585
```

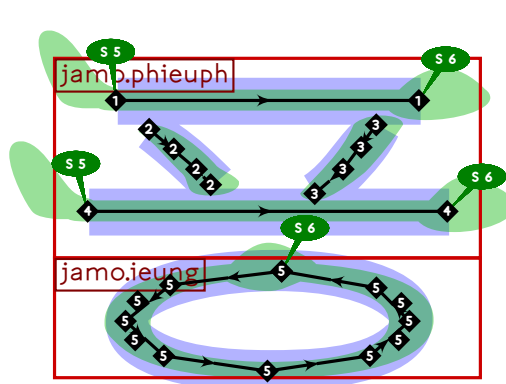


```

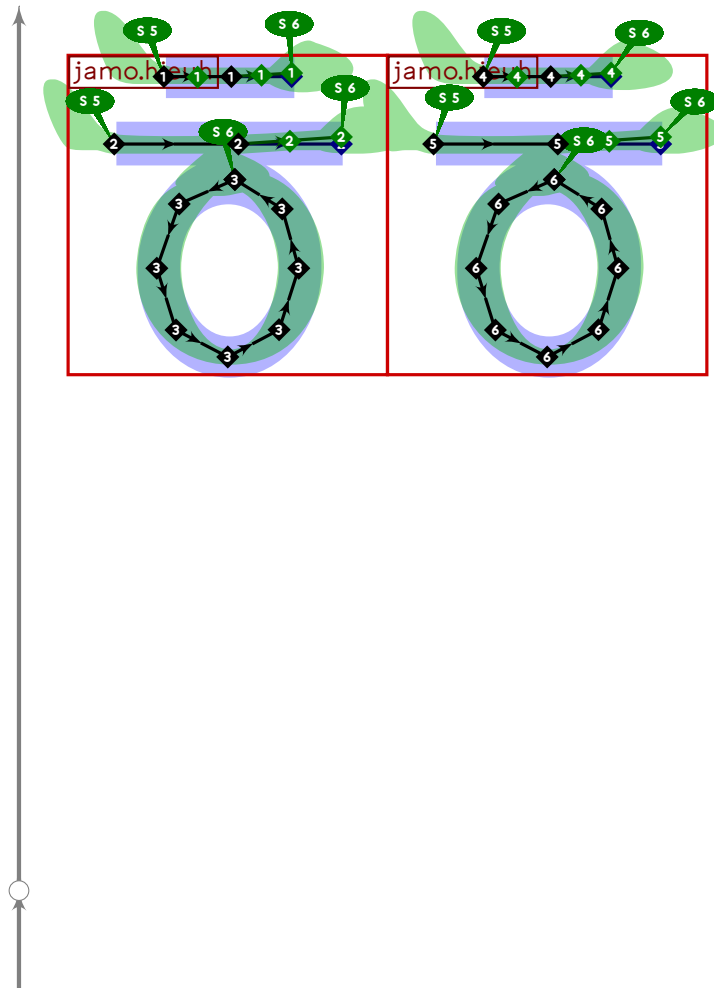
586 % hangul lead phieuph-pieup
587 begintsuglyph("uni1156",86);
588   hangul.combine.lr(117,107)(whatever,lixf,loxf);
589   tsu_render;
590 endtsuglyph;
591

```

U+1157
mande.uni1157



```
592 % hangul lead kapyeounphieuph
593 begintsuglyph("uni1157",87);
594   hangul.combine.tb(117,521)(whatever,
595     hxf((250,850),(850,-50)) transformed lixf,loxf);
596   tsu_render;
597 endtsuglyph;
598
```

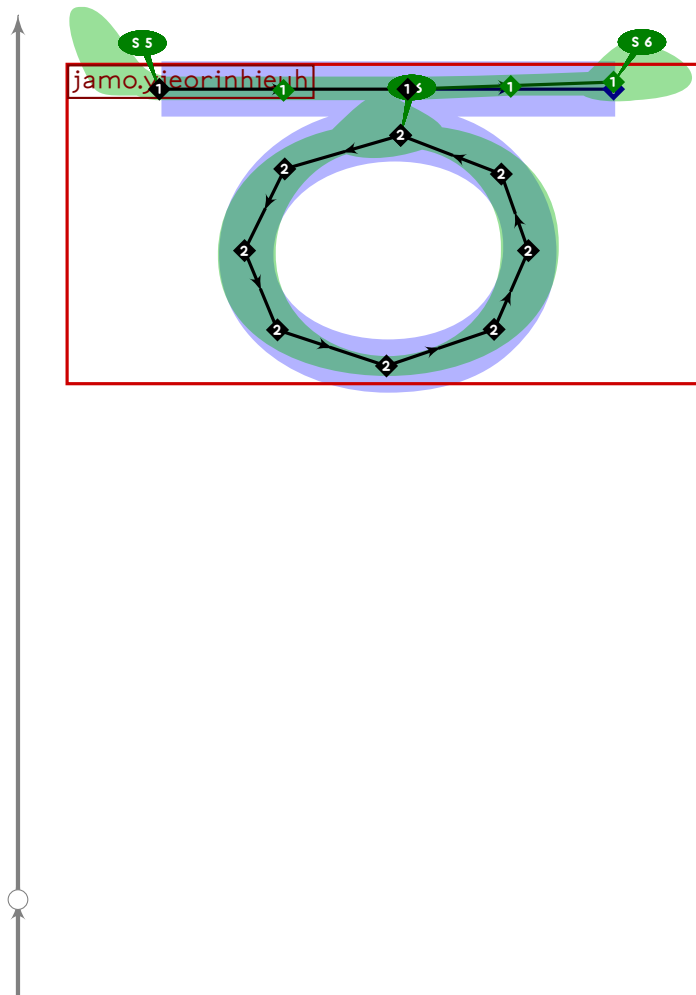


```

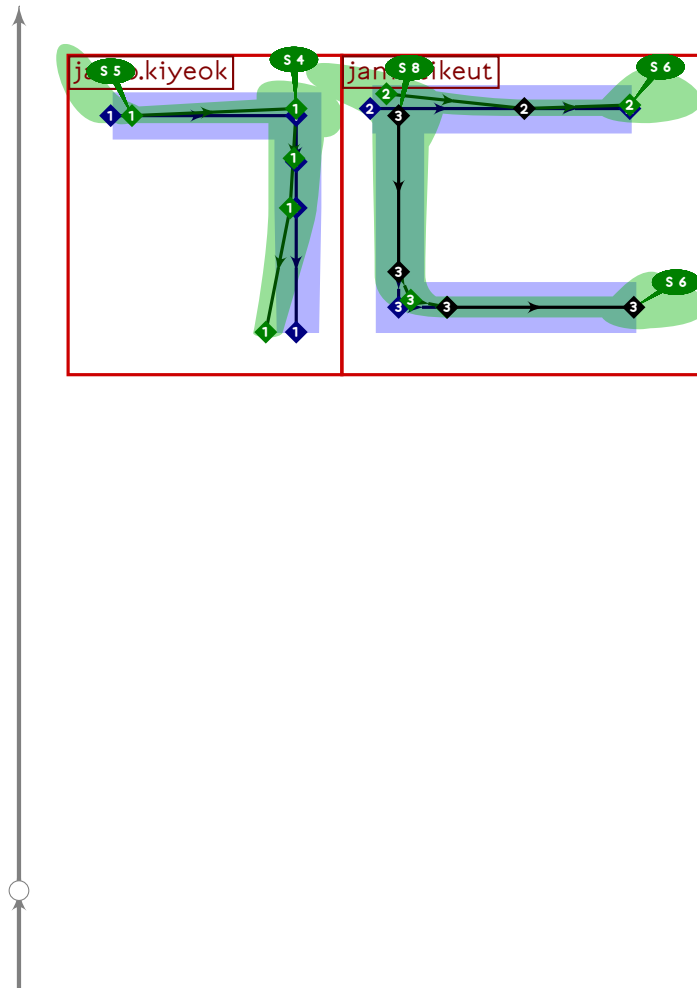
599 % hangul lead ssanghieuh
600 begint Suglyph("uni1158",88);
601   hangul.combine.lcr(118,230,118)(whatever,lixf,loxf);
602   tsu_render;
603 endtsuglyph;
604

```

U+1159
mande.uni1159



```
605 % hangul lead yeorinhieuh
606 begint Suglyph("uni1159",89);
607   hangul.jamo.yeorinhieuh(whatever,lixf,loxf);
608   tsu_render;
609 endtsuglyph;
610
```

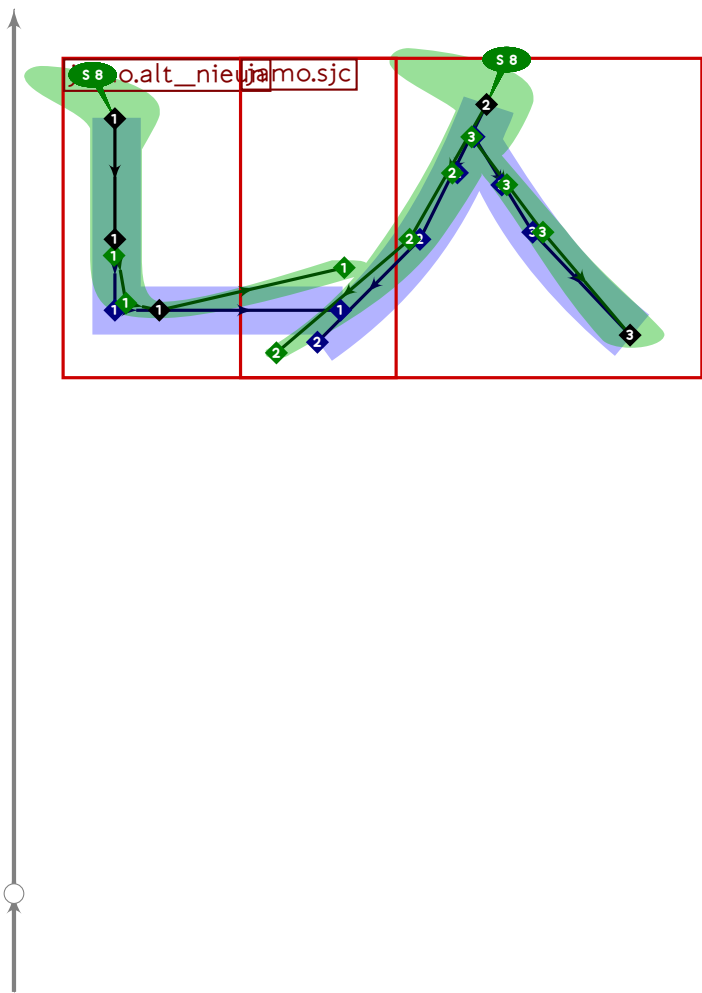


```

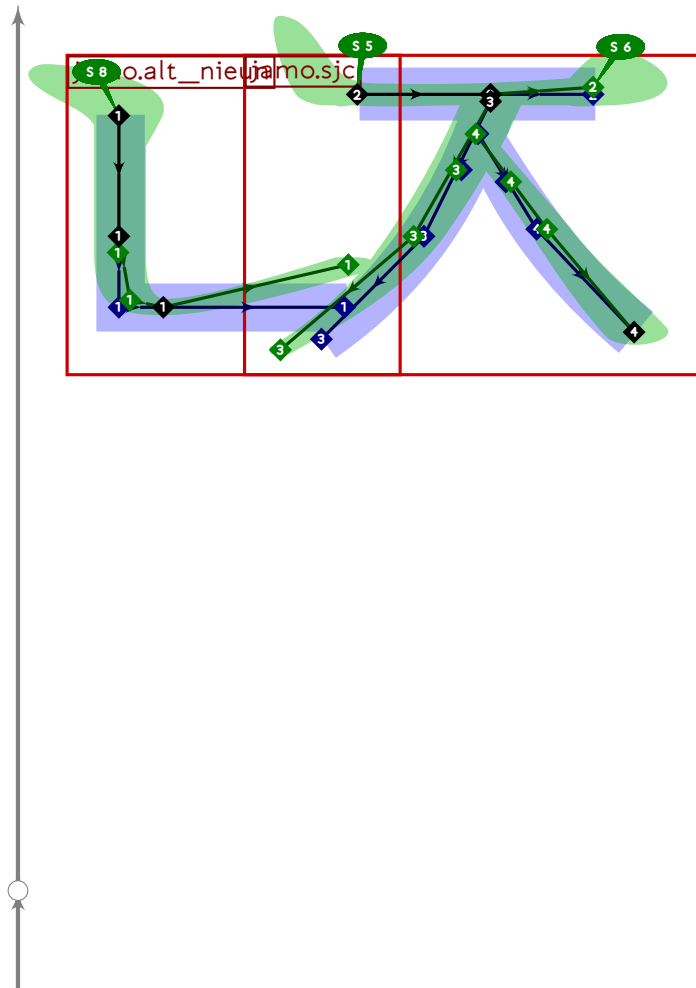
611 % hangul lead kiyeok-tikeut
612 begintsuglyph("uni115A",90);
613 hangul.combine.lr(100,103)(whatever,lixf,loxf);
614 tsu_render;
615 endtsuglyph;
616

```

U+115B
mande.uni115B



```
617 % hangul lead nieun-sios
618 begintsuglyph("uni115B'91);
619 hangul.combine.lr(202,109)(whatever,lixf,loxf);
620 tsu_render;
621 endtsuglyph;
622
```

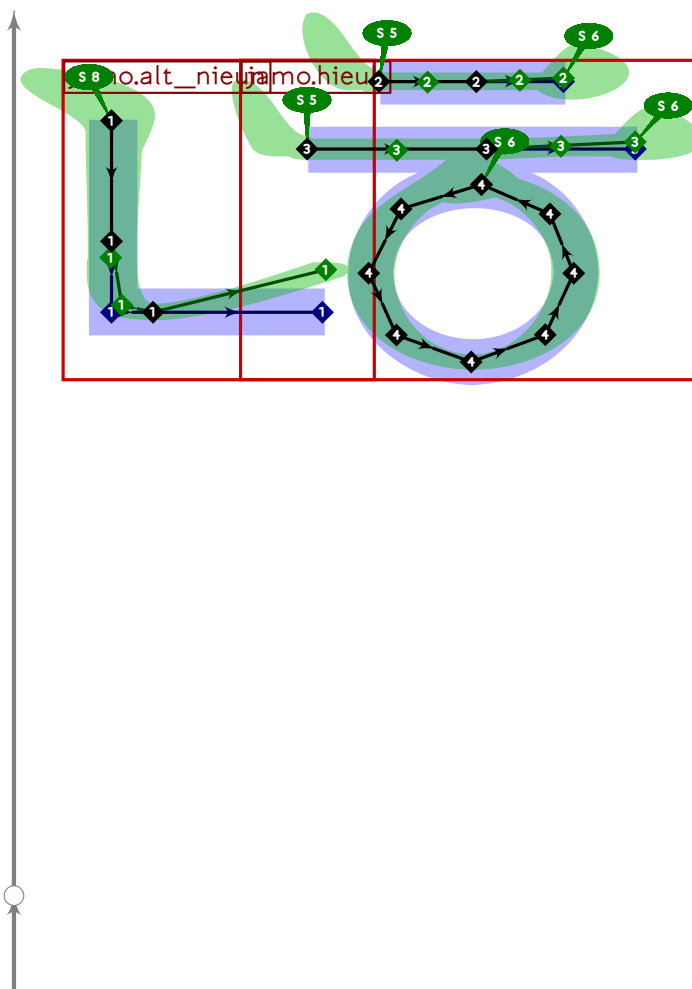



```

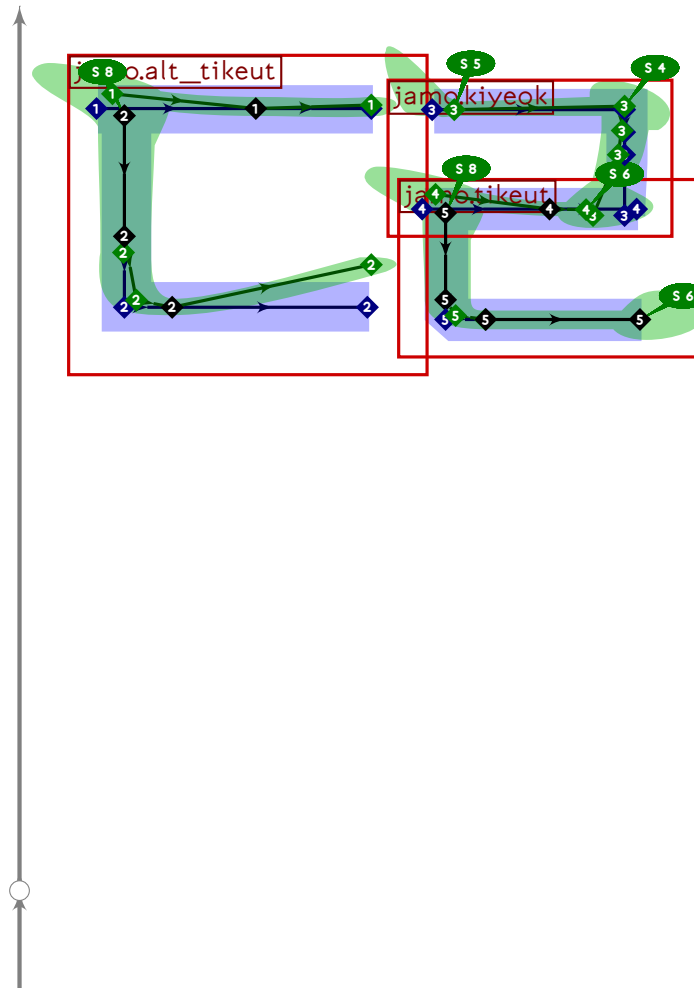
623 % hangul lead nieun-cieuc
624 begintsuglyph("uni115C";92);
625   hangul.combine.lr(202,112)(whatever,lixf,loxf);
626   tsu_render;
627 endtsuglyph;
628

```

U+115D
mande.uni115D



```
629 % hangul lead nieun-hieuh
630 begint Suglyph("uni115D",93);
631   hangul.combine.lr(202,118)(whatever,lixf,loxf);
632   tsu_render;
633 endtsuglyph;
634
```



```

635 % hangul lead tikeut-rieul
636 begintsuglyph("uni115E"94);
637   hangul.combine.lr(203,105)(whatever,lixf,loxf);
638   tsu_render;
639 endtsuglyph;
640
641 % uni115F "lead filler" is a space created by assemble-font script
642
643
644

```

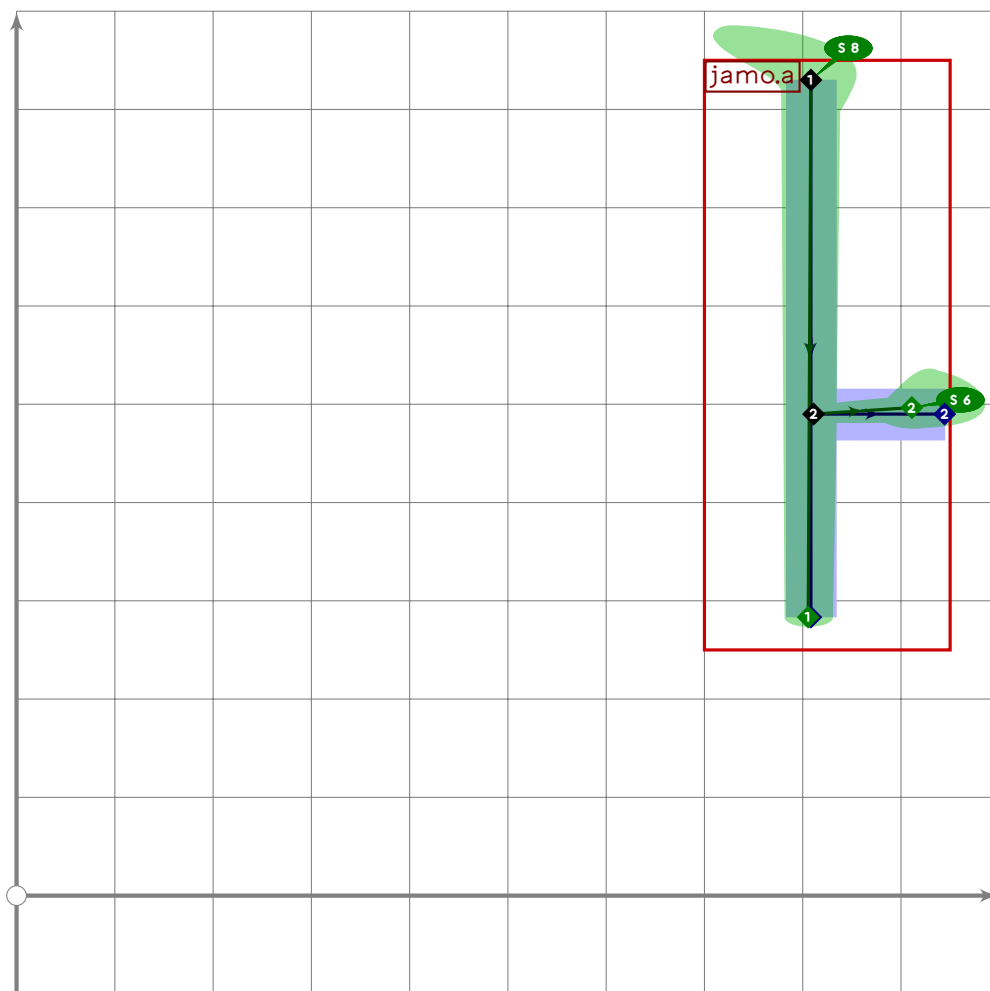
Hangul Jungseong (Vowel) Jamo

```

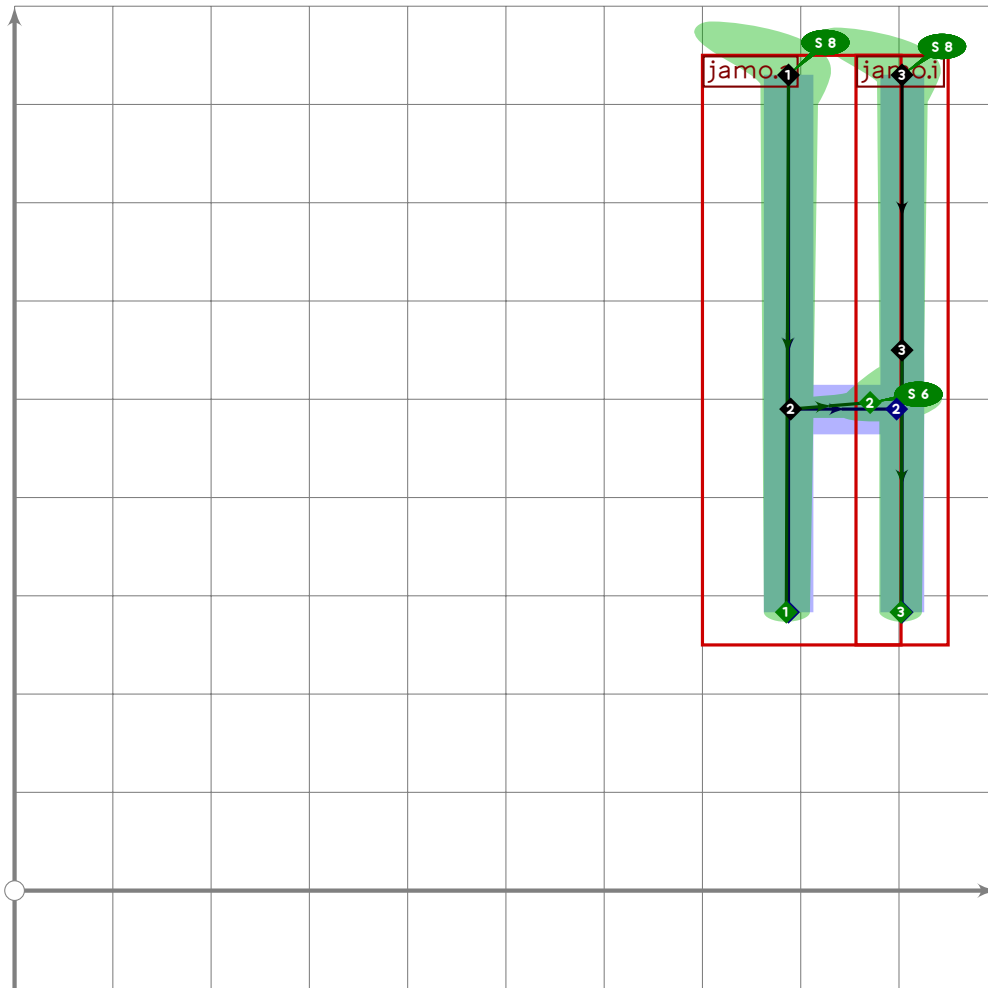
645 % HANGUL JUNGSEONG (VOWEL) JAMO
646
647 tsu_rescale_full;
648
649 % uni1160 "vowel filler" is a space created by assemble-font script
650

```

U+1161
mande.uni1161



```
651 % hangul vowel a
652 begint Suglyph("uni1161";97);
653   hangul.jamo.a(300,vixf,vox f);
654   tsu_render;
655 endtsuglyph;
656
```

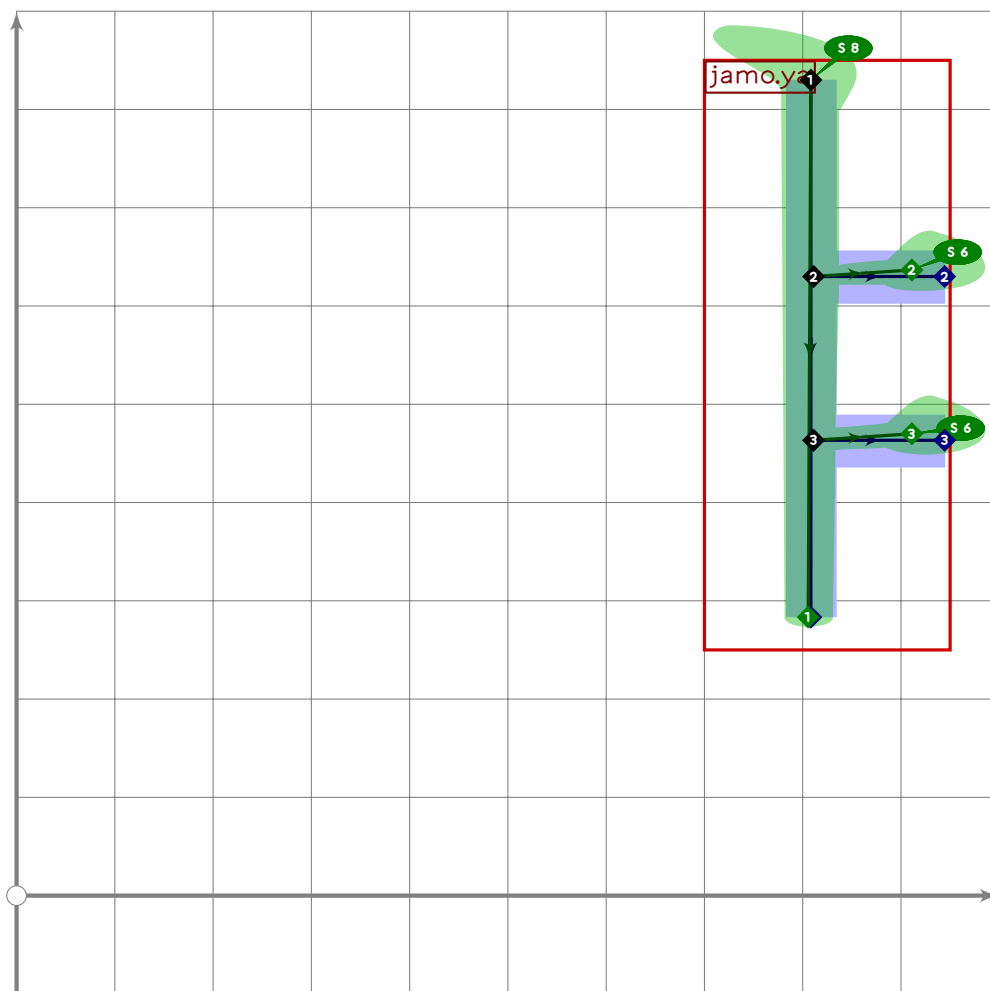


```

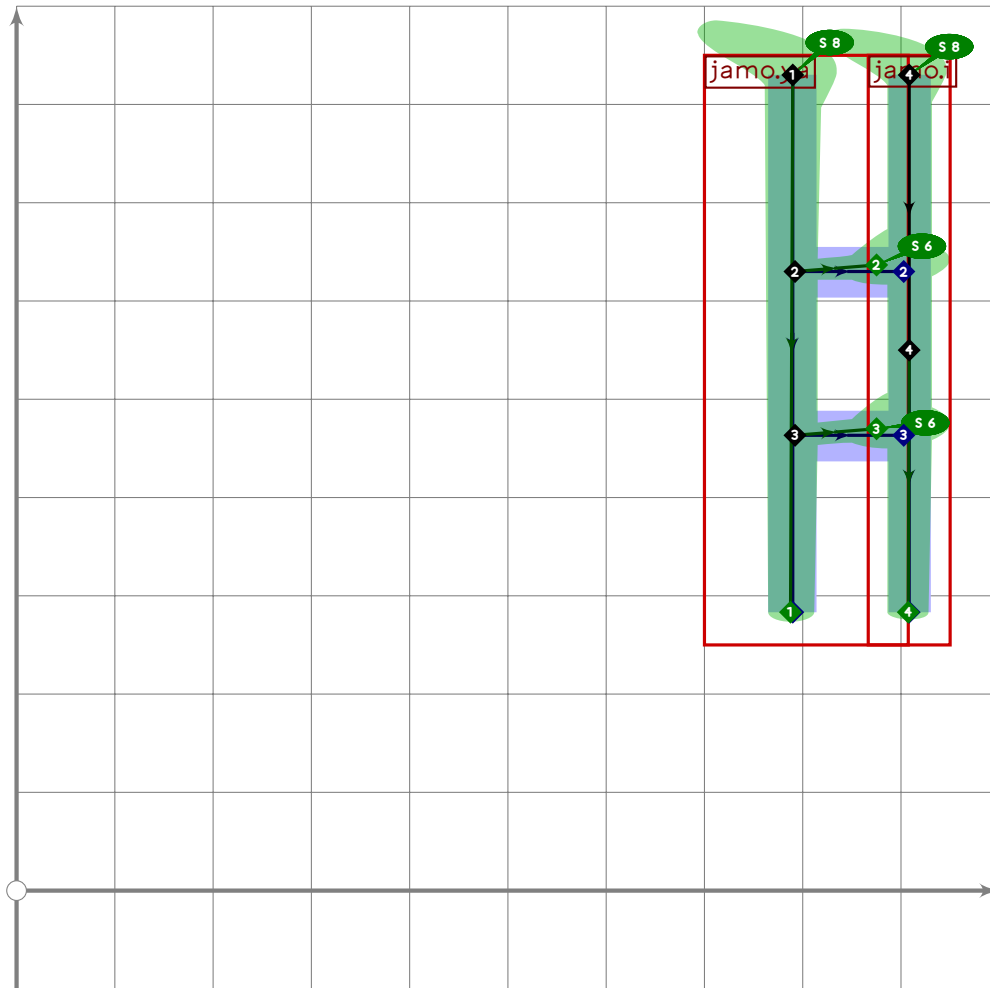
657 % hangul vowel ae
658 begint Suglyph("uni1162",98);
659   hangul.combine.lr(300,320)(301,vixf,vox);
660   tsu_render;
661 endtsuglyph;
662

```

U+1163
mande.uni1163



```
663 % hangul vowel ya
664 begint Suglyph("uni1163",99);
665   hangul.jamo.ya(302,vixf,voxf);
666   tsu_render;
667 endtsuglyph;
668
```

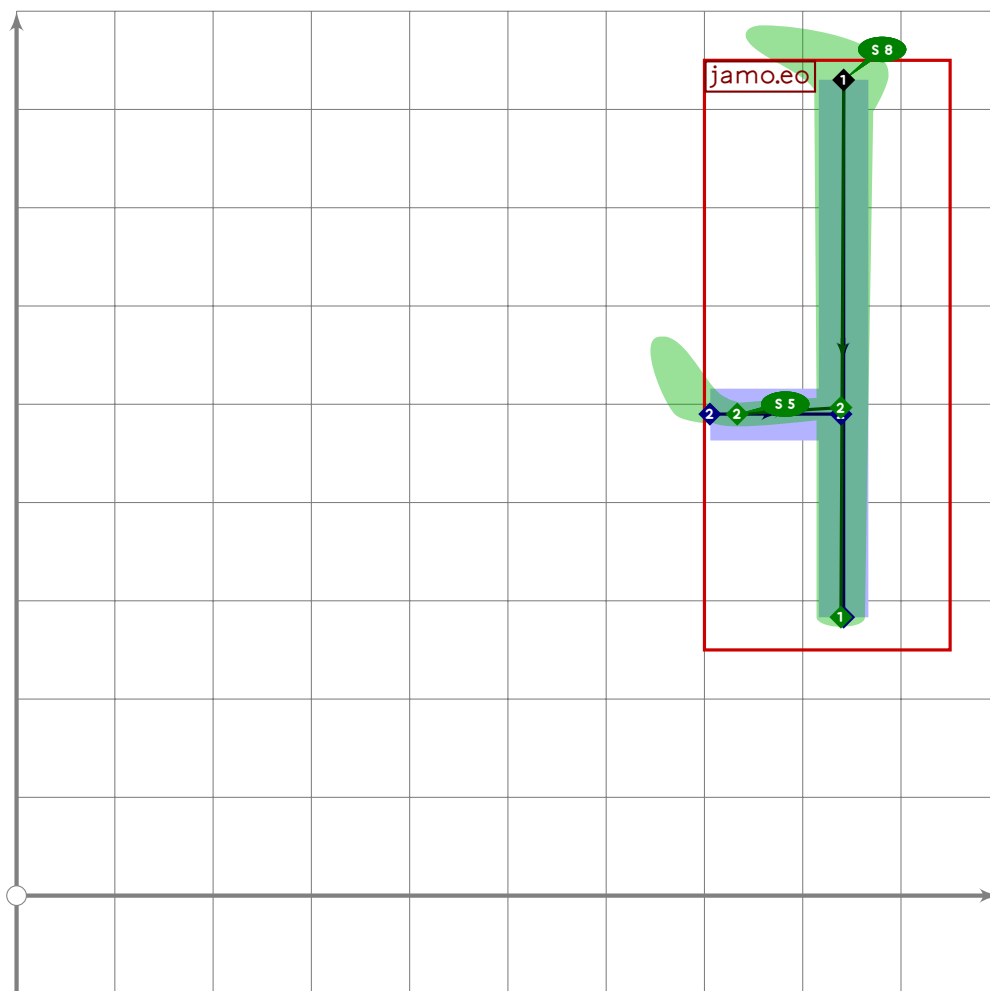


```

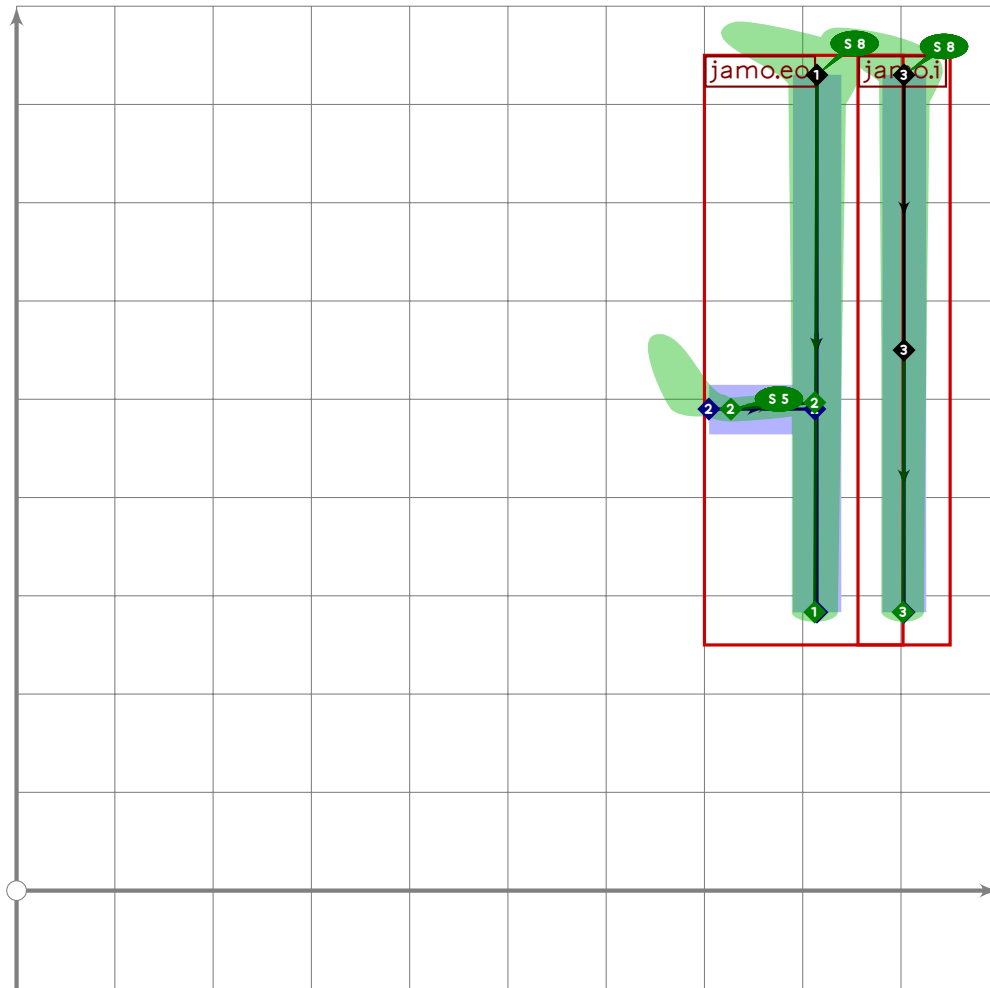
669 % hangul vowel yae
670 begint Suglyph("uni1164";100);
671   hangul.combine.lr(302,320)(303,vixf,vox);
672   tsu_render;
673 endtsuglyph;
674

```

U+1165
mande.uni1165



```
675 % hangul vowel eo
676 begintsuglyph("uni1165",101);
677   hangul.jamo.eo(304,vixf,vox);
678   tsu_render;
679 endtsuglyph;
680
```

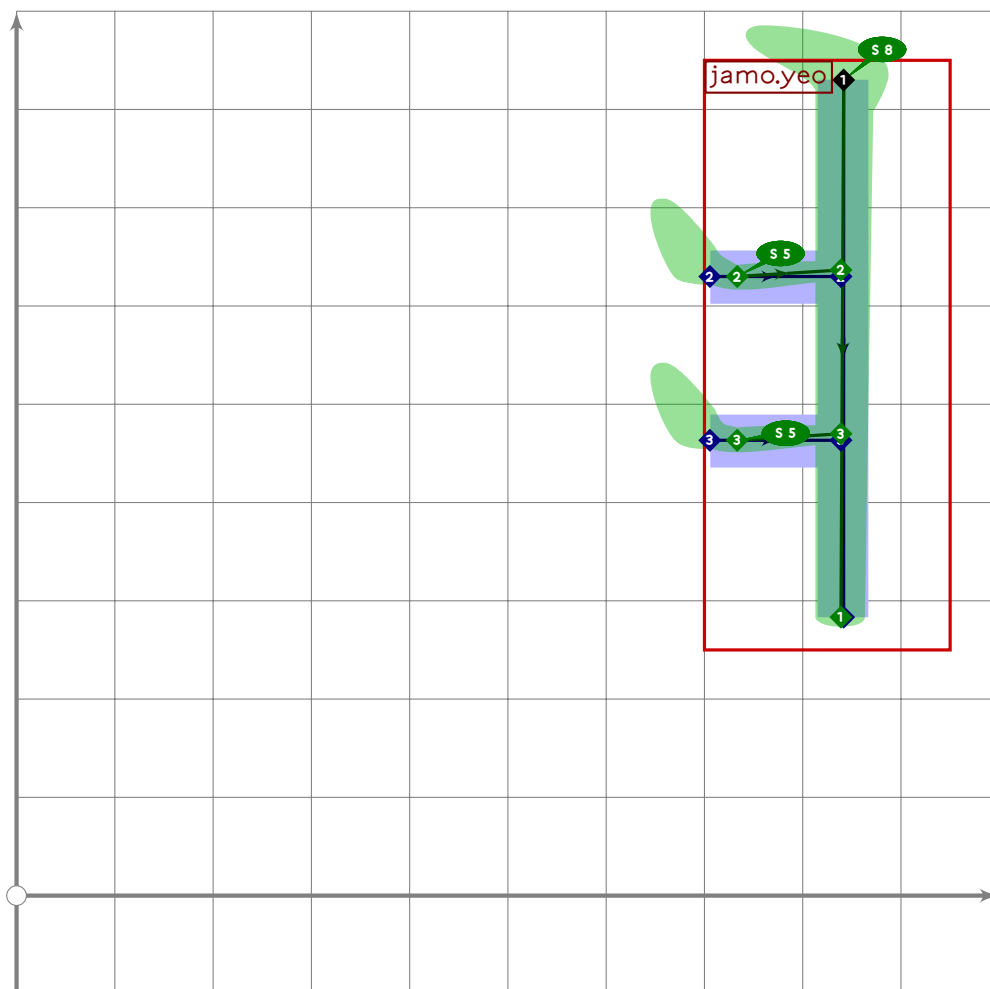



```

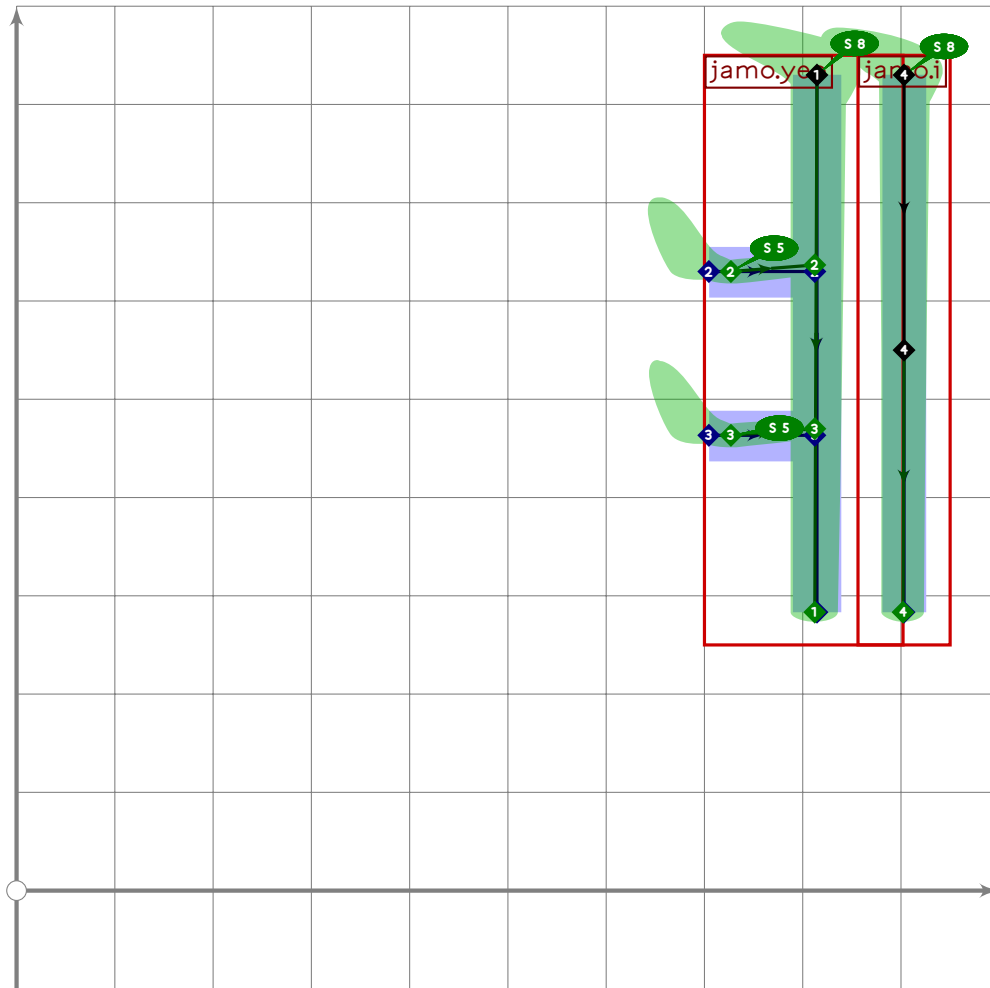
681 % hangul vowel e
682 begintsuglyph("uni1166",102);
683   hangul.combine.lr(304,320)(305,vixf,voxf);
684   tsu_render;
685 endtsuglyph;
686

```

U+1167
mande.uni1167



```
687 % hangul vowel yeo
688 begintsuglyph("uni1167",103);
689   hangul.jamo.yeo(306,vixf,vox);
690   tsu_render;
691 endtsuglyph;
692
```

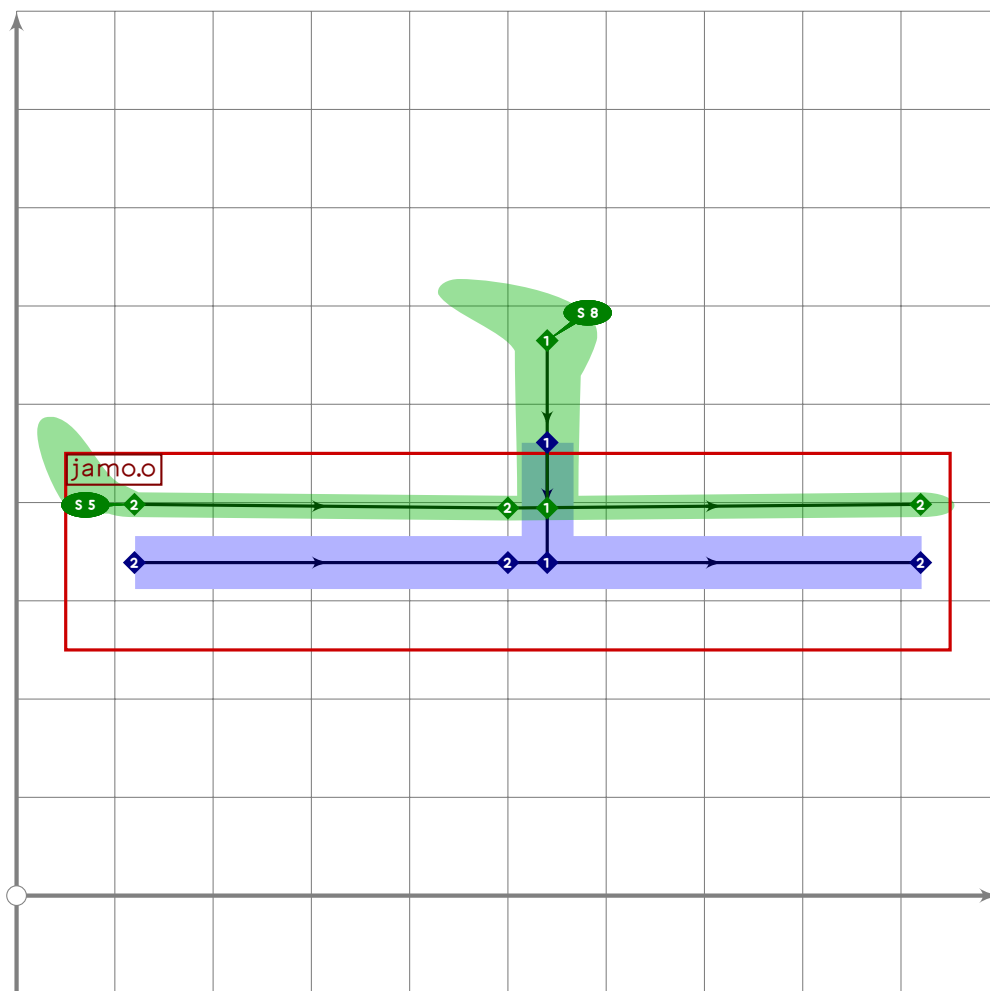


```

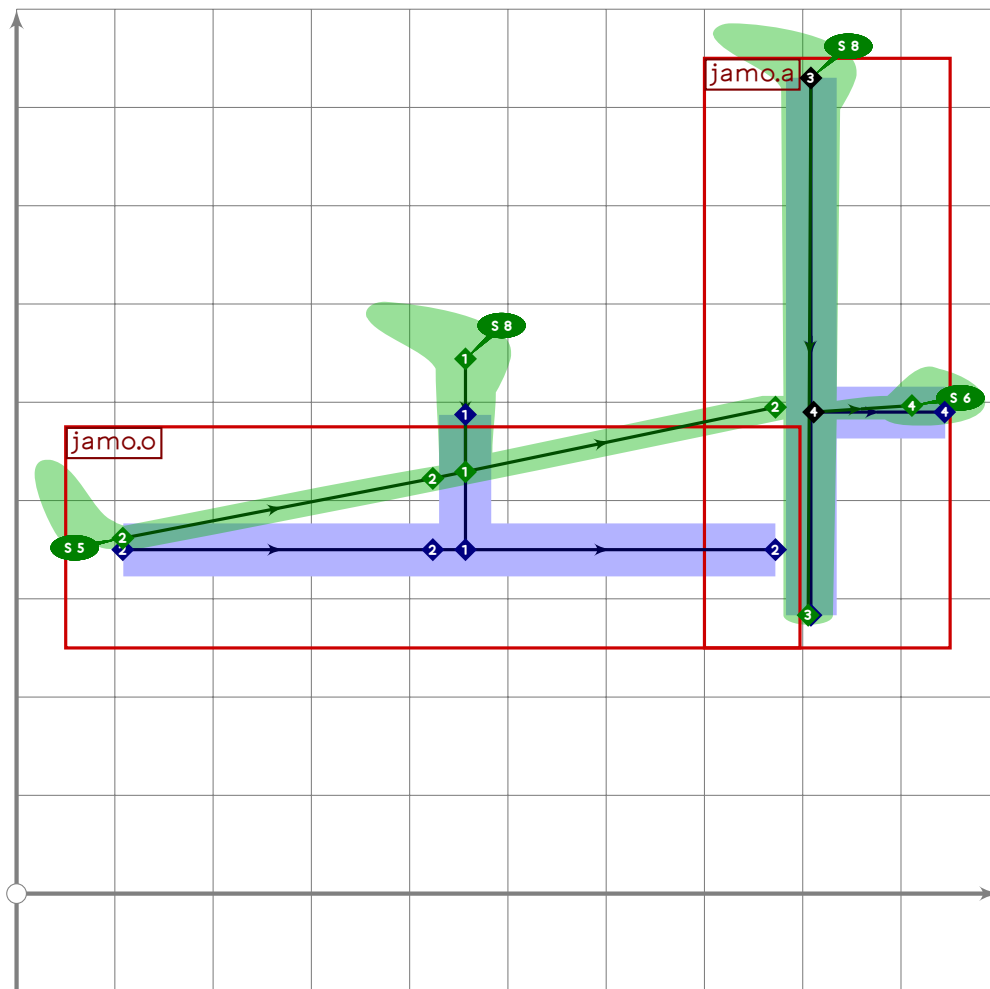
693 % hangul vowel ye
694 begintsuglyph("uni1168",104);
695   hangul.combine.lr(306,320)(307,vixf,voxf);
696   tsu_render;
697 endtsuglyph;
698

```

U+1169
mande.uni1169



```
699 % hangul vowel o
700 begint Suglyph("uni1169",105);
701   hangul.jamo.o(308,vixf,voxf);
702   tsu_render;
703 endtsuglyph;
704
```

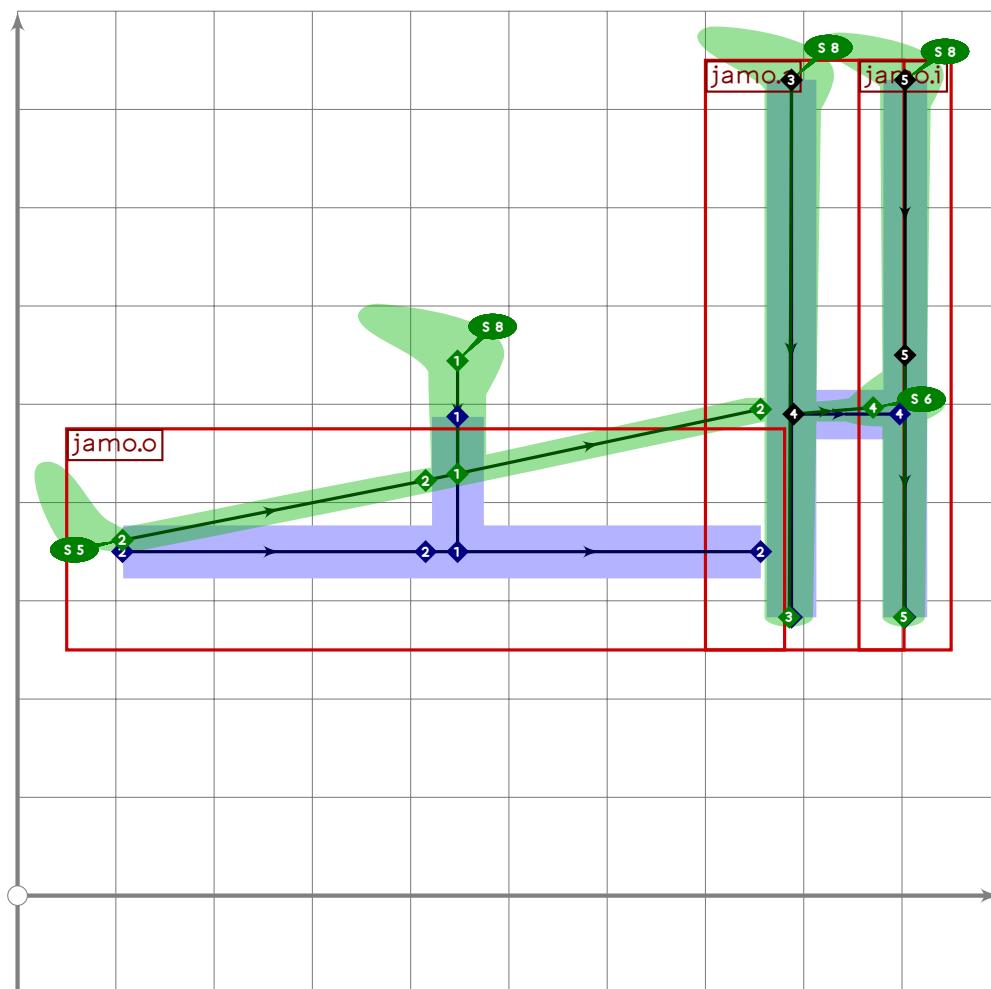


```

705 % hangul vowel wa
706 begintsuglyph("uni116A",106);
707   hangul.combine.lr(308,300)(309,vixf,vox);
708   tsu_render;
709 endtsuglyph;
710

```

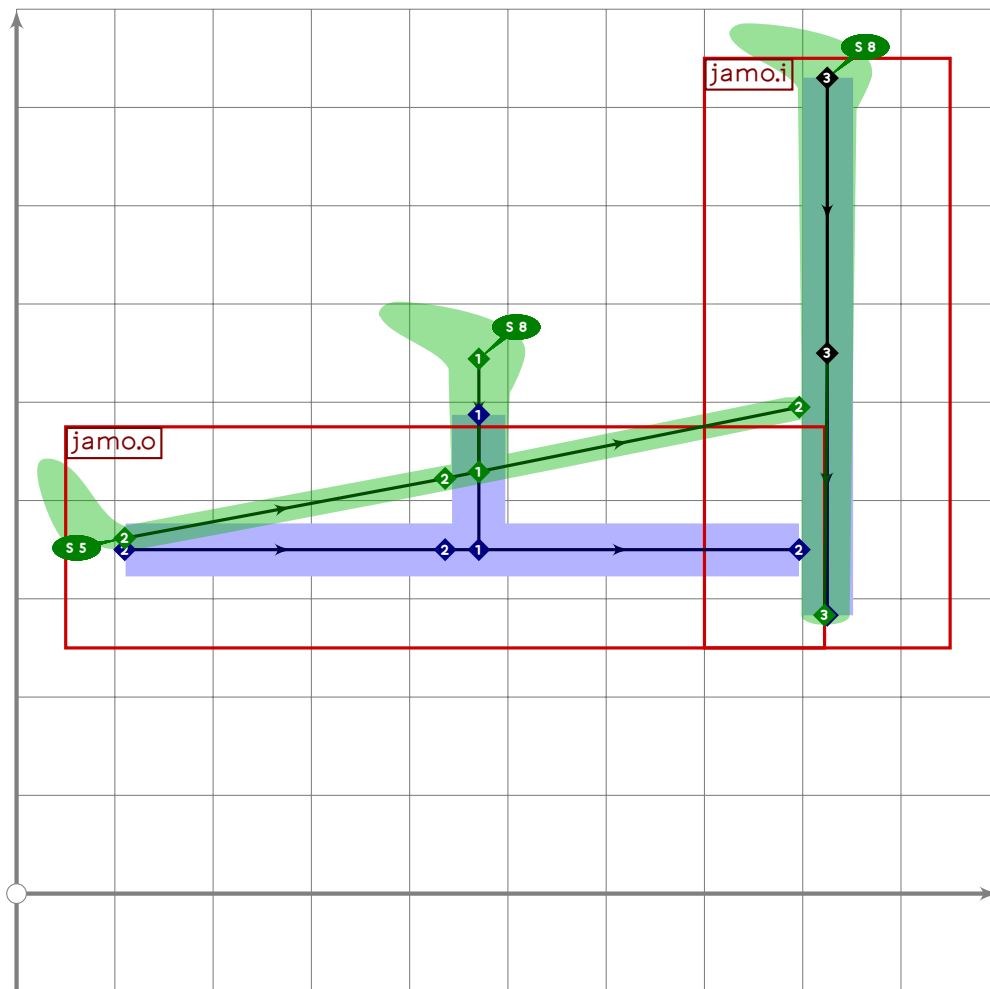
U+116B
mande.uni116B



```

711 % hangul vowel wae
712 begintsuglyph("uni116B",107);
713 hangul.combine.lr(308,301)(310,vixf,vox);
714 tsu_render;
715 endtsuglyph;
716

```

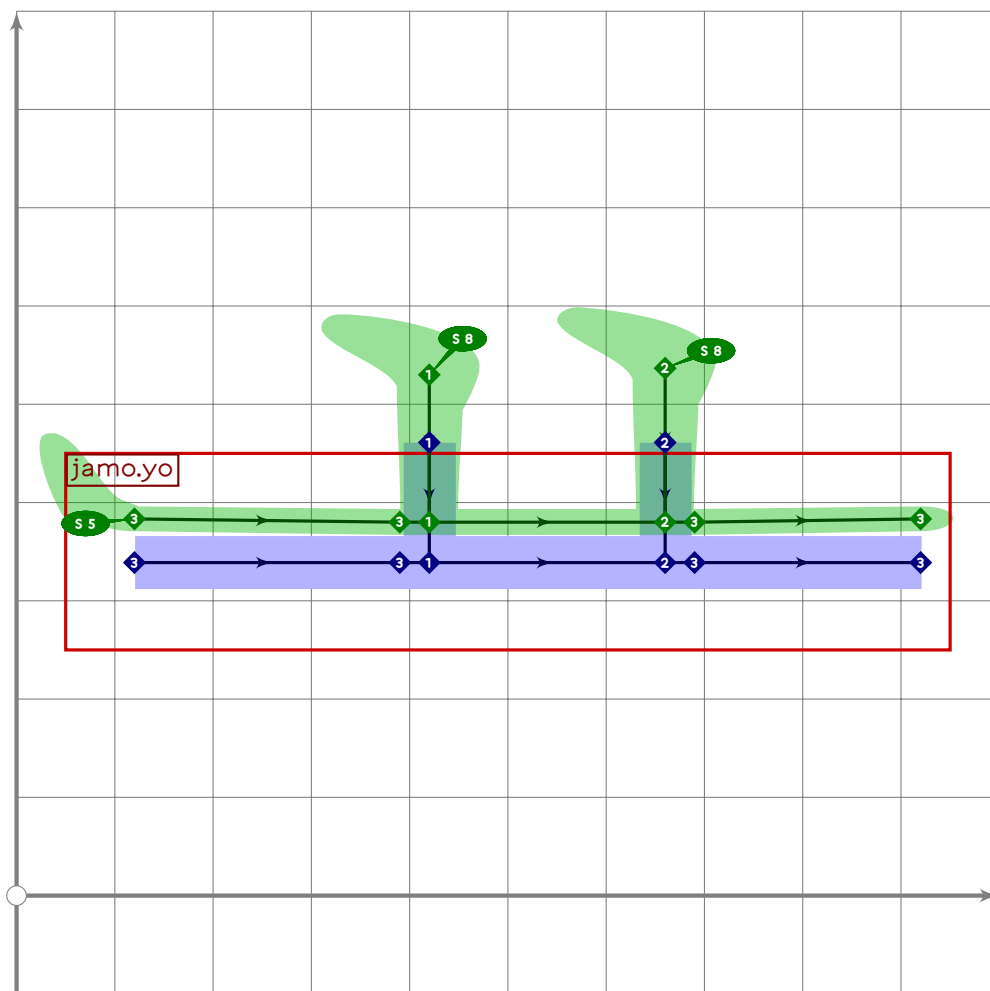


```

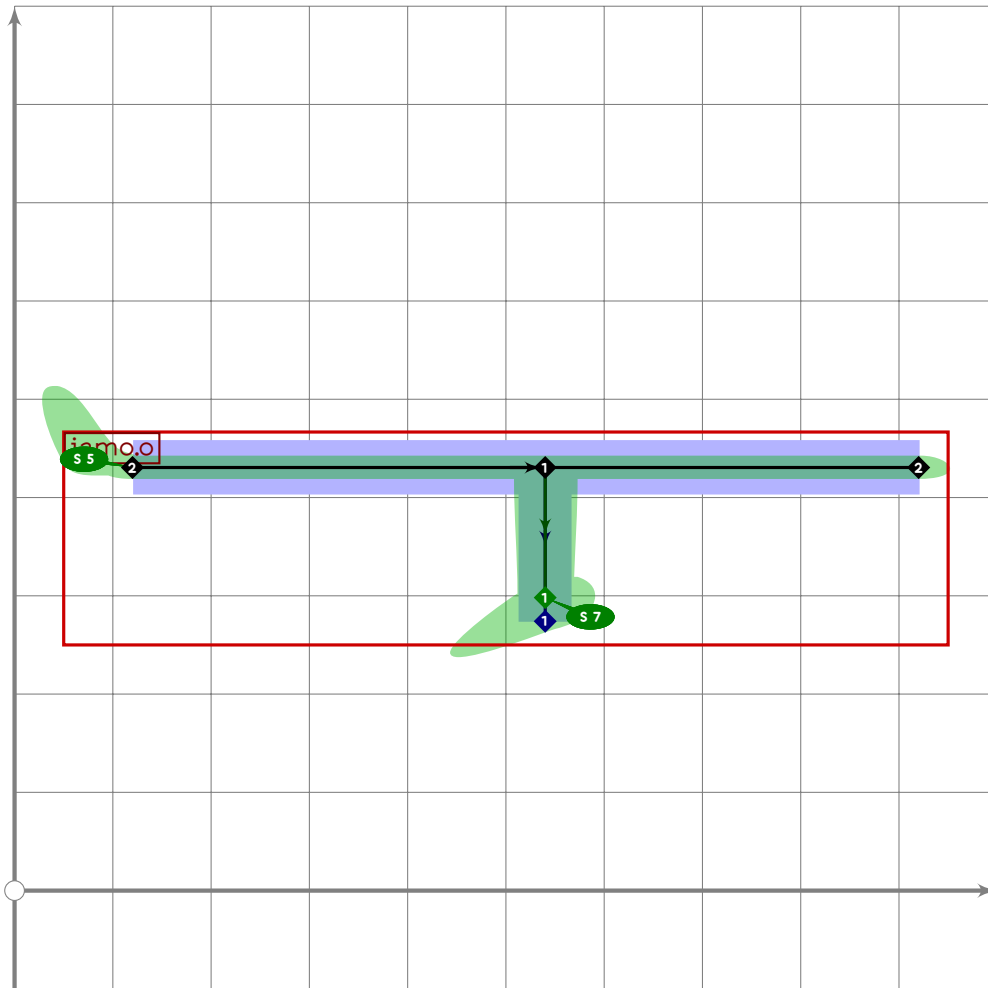
717 % hangul vowel oe
718 begintsuglyph("uni116C",108);
719 hangul.combine.lr(308,320)(311,vixf,voxf);
720 tsu_render;
721 endtsuglyph;
722

```

U+116D
mande.uni116D



```
723 % hangul vowel yo
724 begintsuglyph("uni116D";109);
725   hangul.jamo.yo(312,vixf,vox);
726   tsu_render;
727 endtsuglyph;
728
```

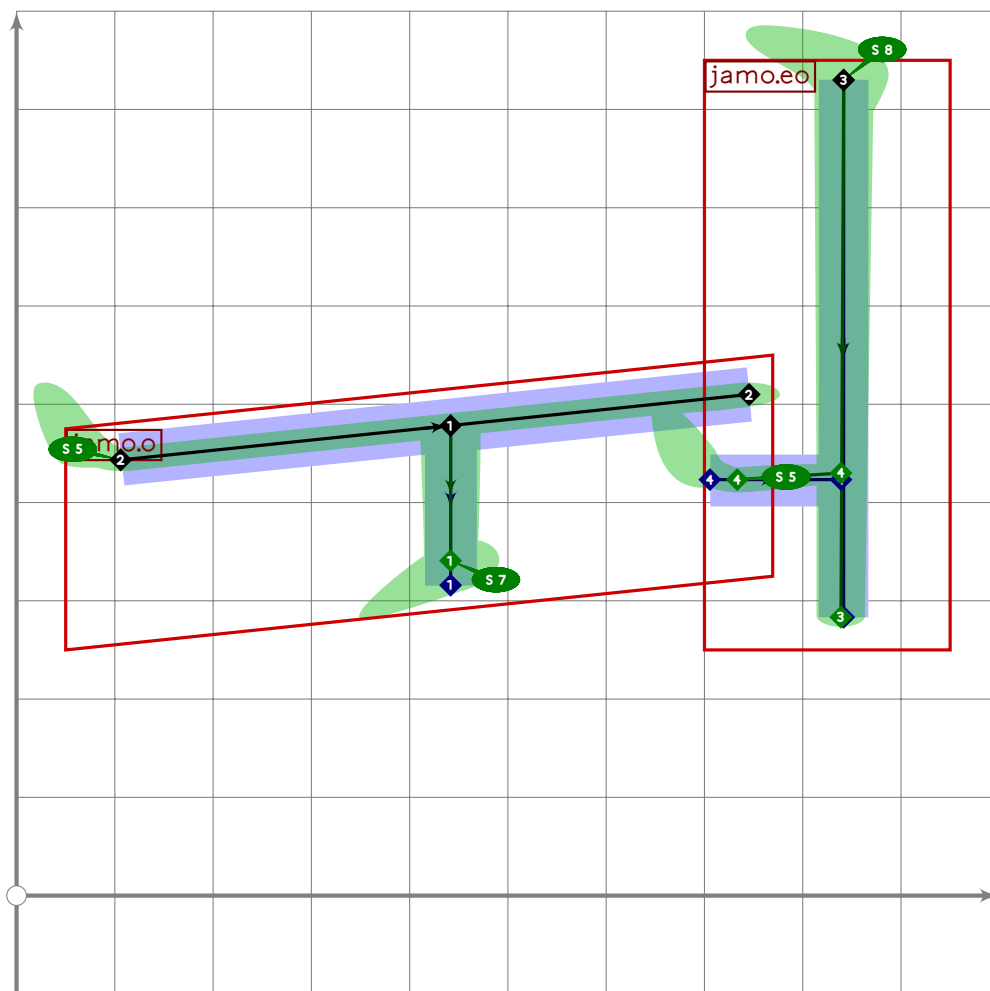



```

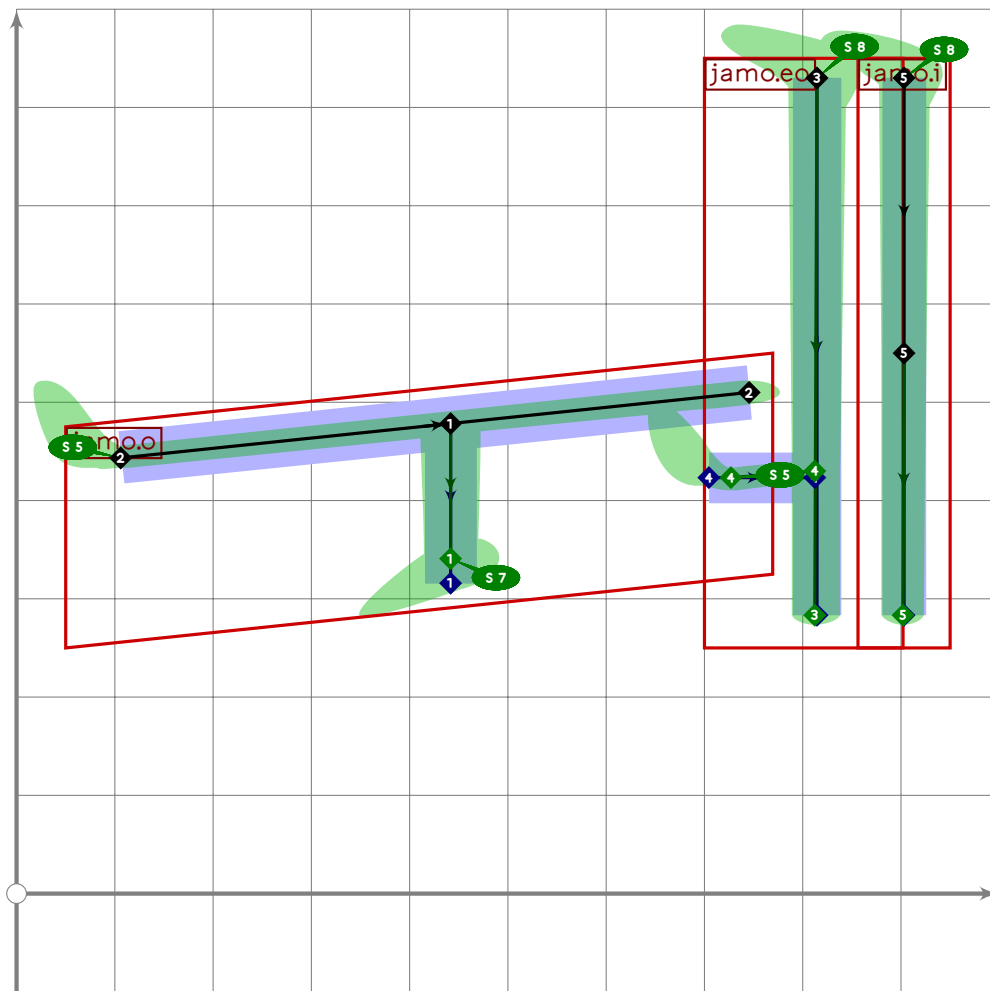
729 % hangul vowel u
730 begint Suglyph("uni116E";110);
731   hangul.jamo.u(313,vixf,voxf);
732   tsu_render;
733 endtsuglyph;
734

```

U+116F
mande.uni116F



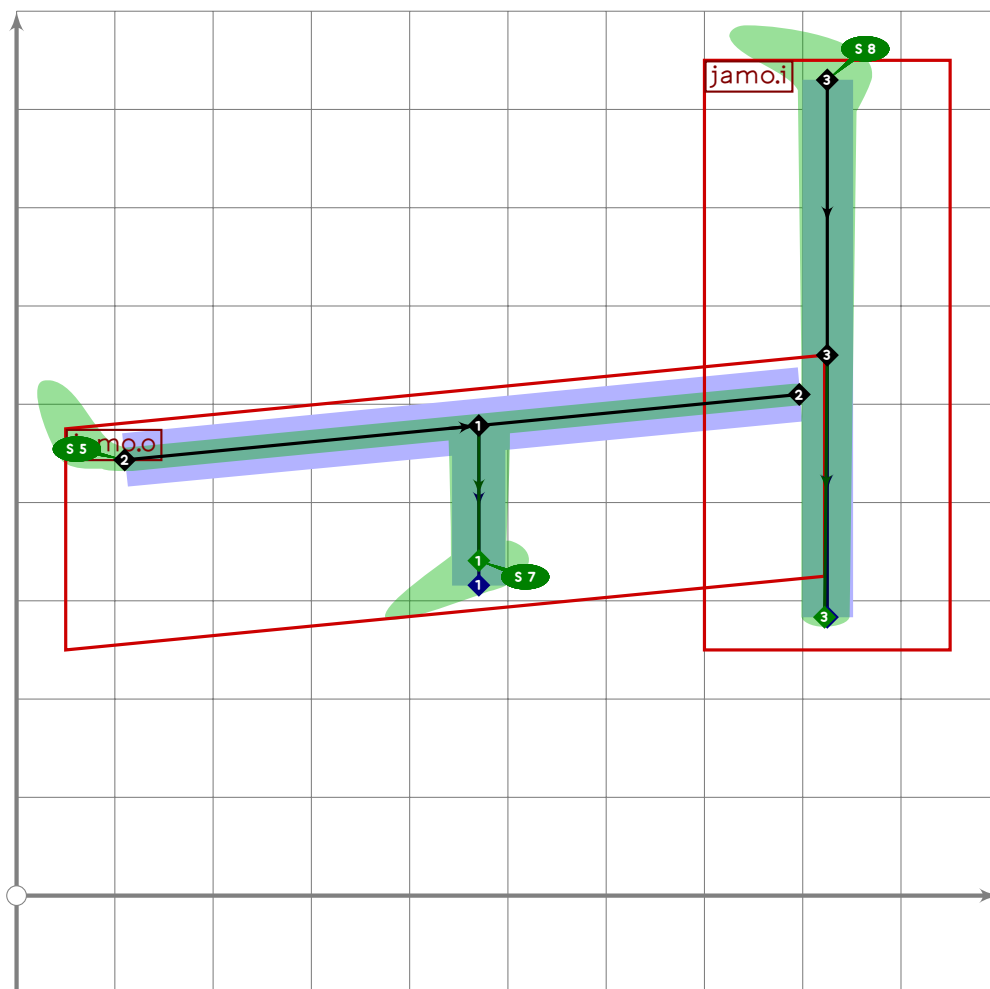
```
735 % hangul vowel weo
736 begint Suglyph("uni116F";111);
737 hangul.combine.lr(313,304)(314,vixf,vox);
738 tsu_render;
739 endtsuglyph;
740
```



```

741 % hangul vowel we
742 beginsuglyph("uni1170",112);
743 hangul.combine.lr(313,305)(315,vixf,voxf);
744 tsu_render;
745 endtsuglyph;
746

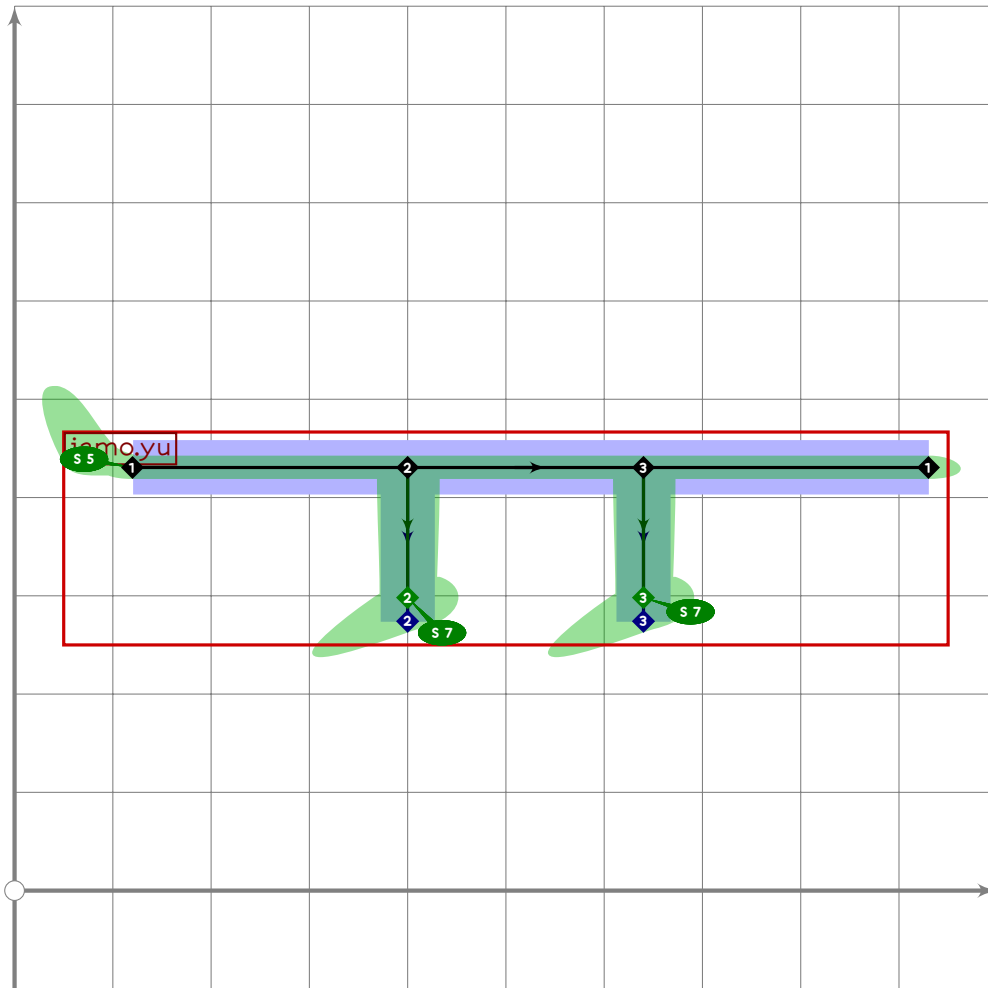
```



```

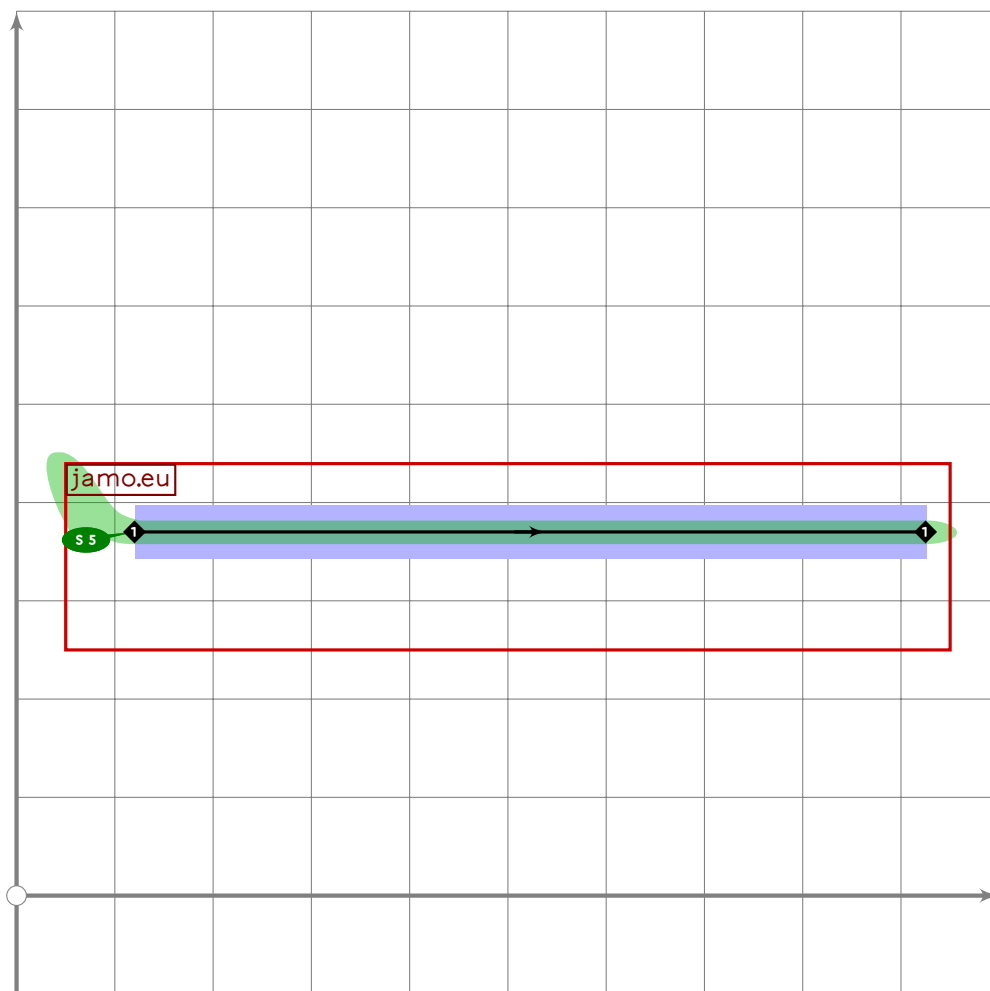
747 % hangul vowel wi
748 begintsuglyph("uni1171",113);
749 hangul.combine.lr(313,320)(316,vixf,vox);
750 tsu_render;
751 endtsuglyph;
752

```

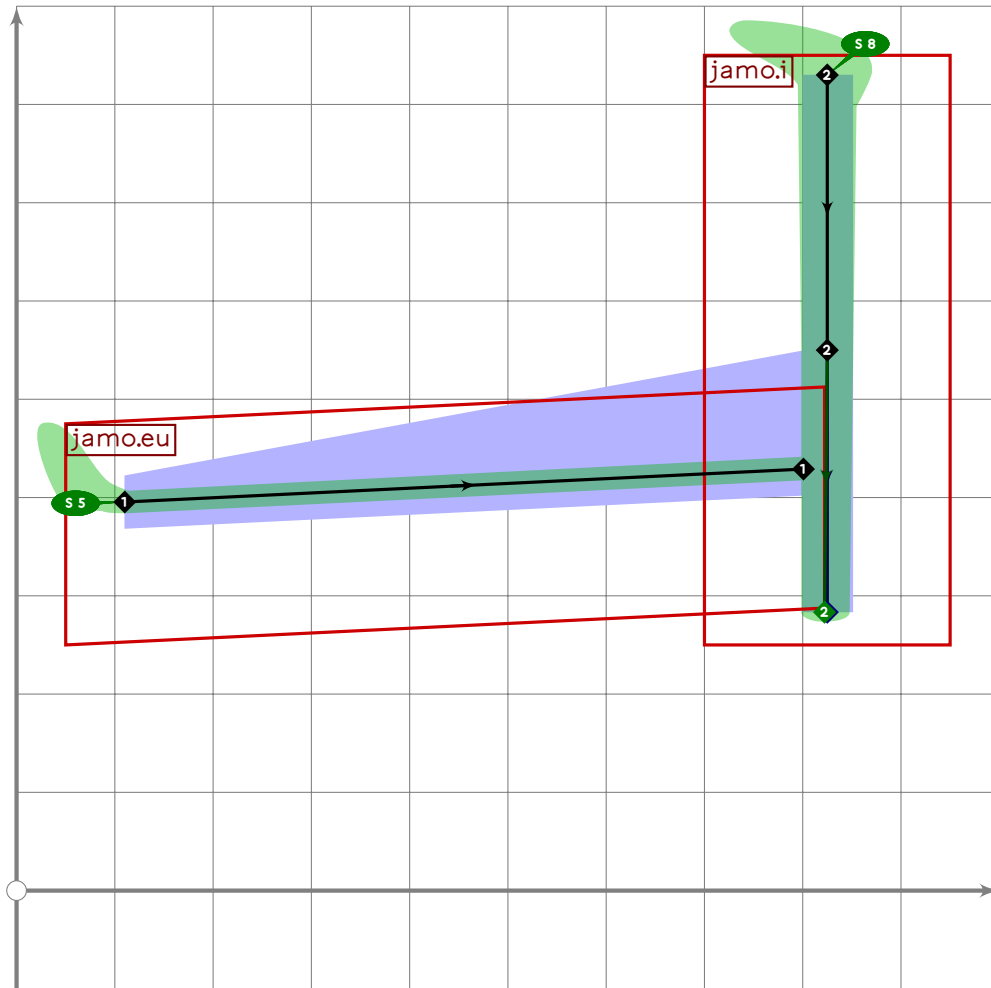


```
753 % hangul vowel yu
754 begint Suglyph("uni1172",114);
755   hangul.jamo.yu(317,vixf,vox);
756   tsu_render;
757 endtsuglyph;
758
```

U+1173
mande.uni1173



```
759 % hangul vowel eu
760 begint Suglyph("uni1173",115);
761   hangul.jamo.eu(318,vixf,vox);
762   tsu_render;
763 endtsuglyph;
764
```

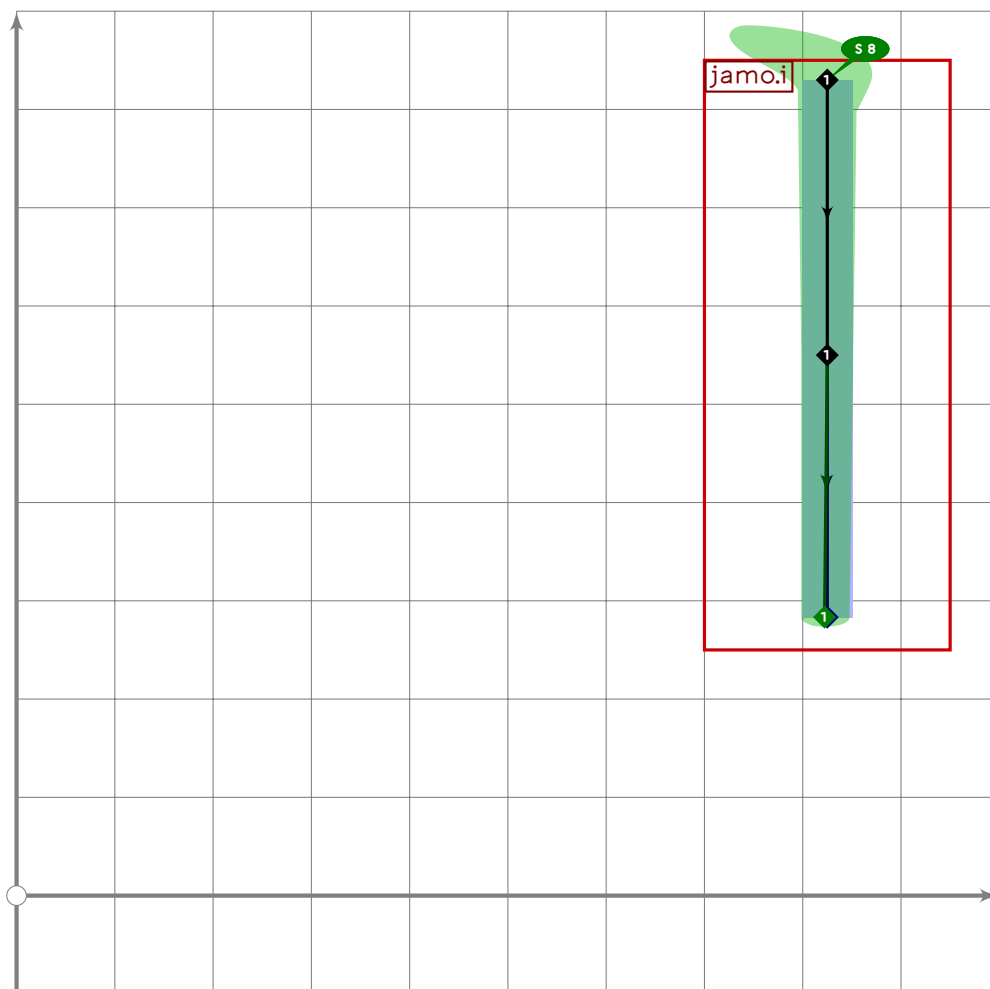


```

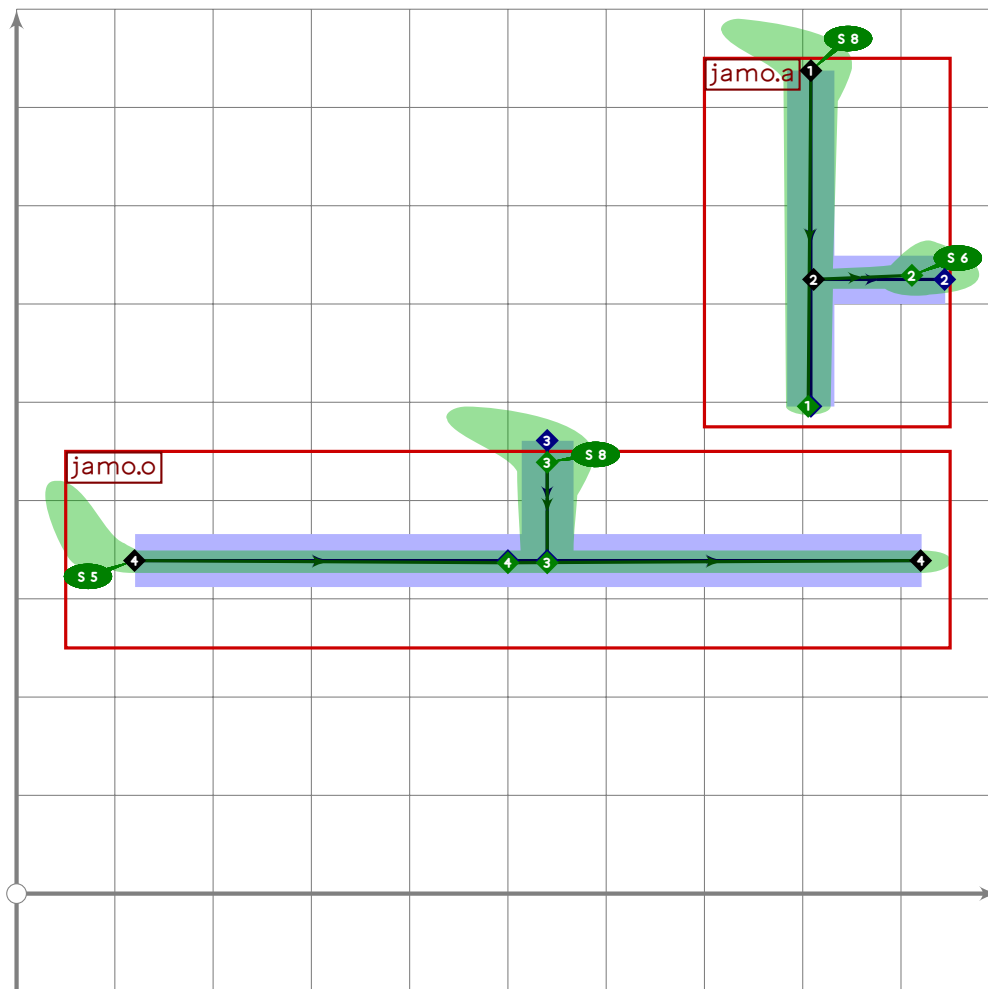
765 % hangul vowel yi
766 begintsuglyph("uni1174",116);
767   hangul.combine.lr(318,320)(319,vixf,voxf);
768   tsu_render;
769 endtsuglyph;
770

```

U+1175
mande.uni1175



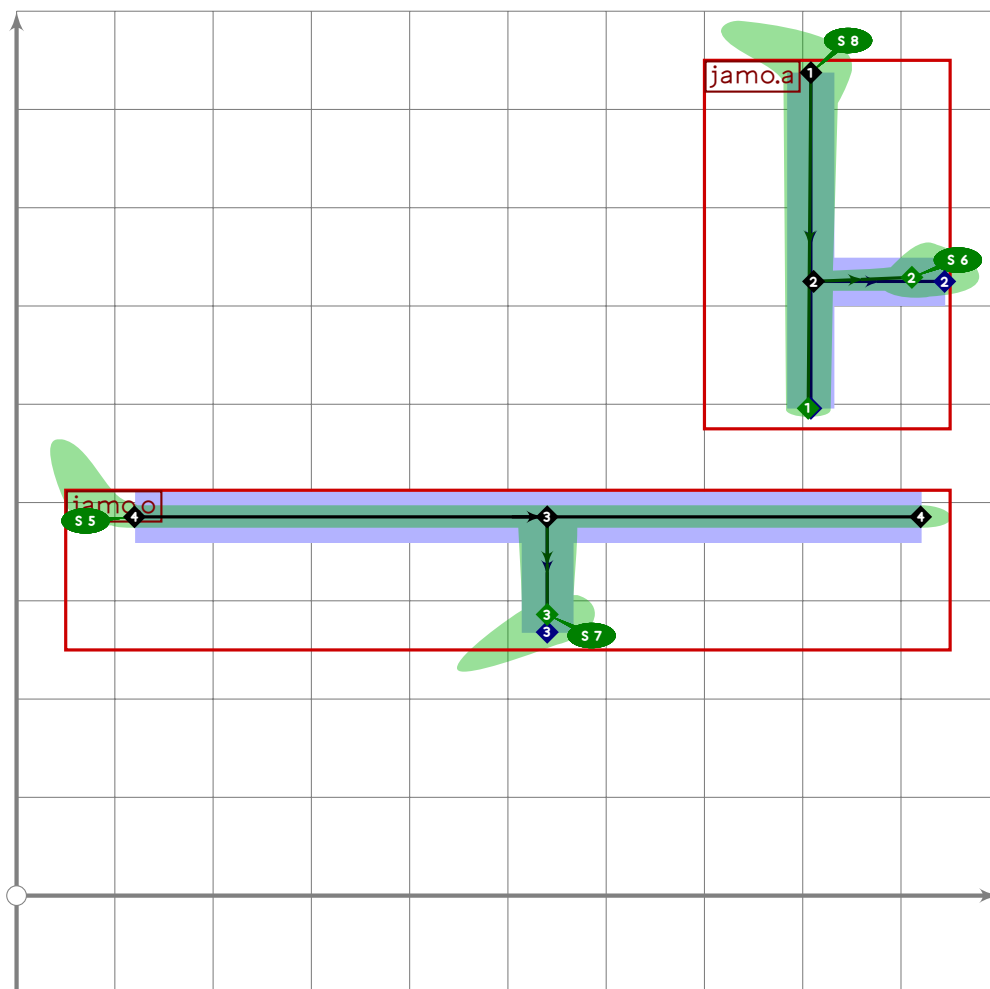
```
771 % hangul vowel i
772 begint Suglyph("uni1175",117);
773   hangul.jamo.i(320,vixf,vox);
774   tsu_render;
775 endtsuglyph;
776
```

```

777 % hangul vowel a-o
778 begintsuglyph("uni1176",118);
779 hangul.combine.tb(300,308)(whatever,vixf,voxf);
780 tsu_render;
781 endtsuglyph;
782

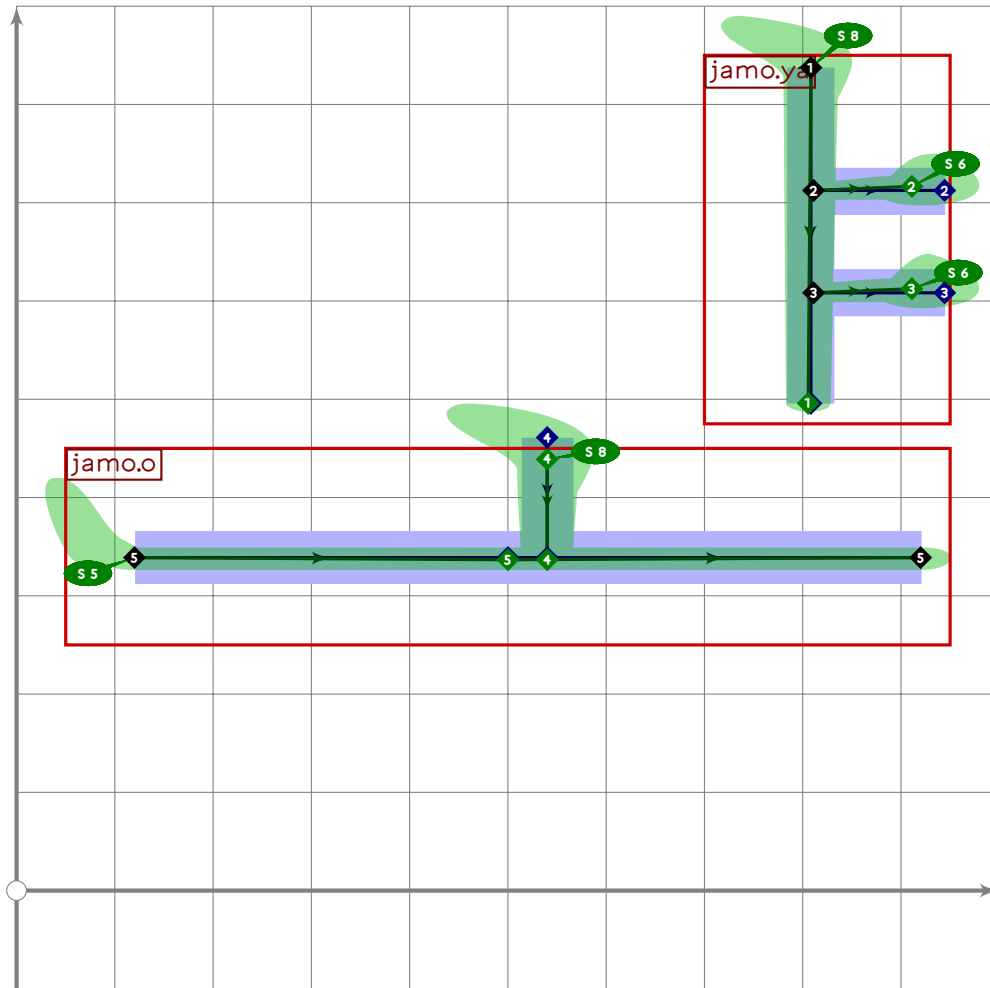
```



```

783 % hangul vowel a-u
784 beginsuglyph("uni1177";119);
785   hangul.combine.tb(300,313)(whatever,vixf,vox);
786   tsu_render;
787 endsuglyph;
788

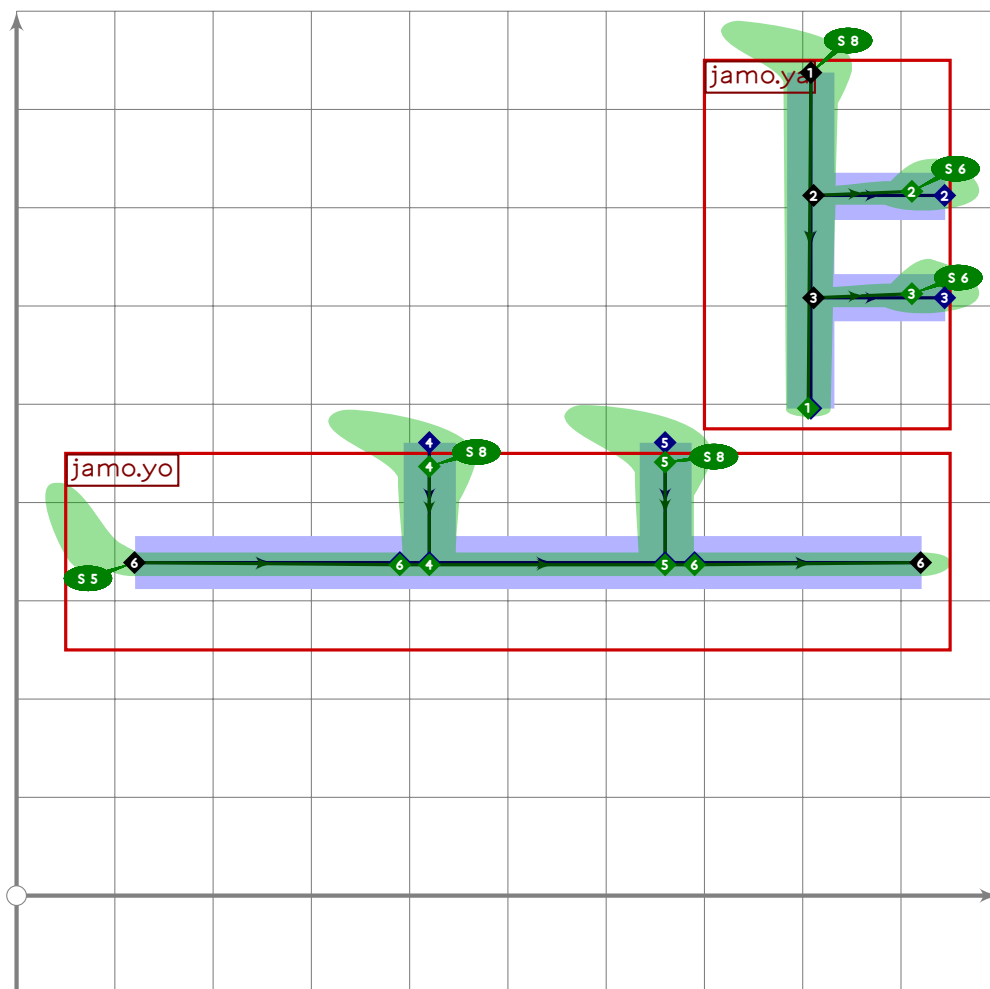
```



```

789 % hangul vowel ya-o
790 beginsuglyph("uni1178",120);
791   hangul.combine.tb(302,308)(whatever,vixf,vox);
792   tsu_render;
793 endsuglyph;
794

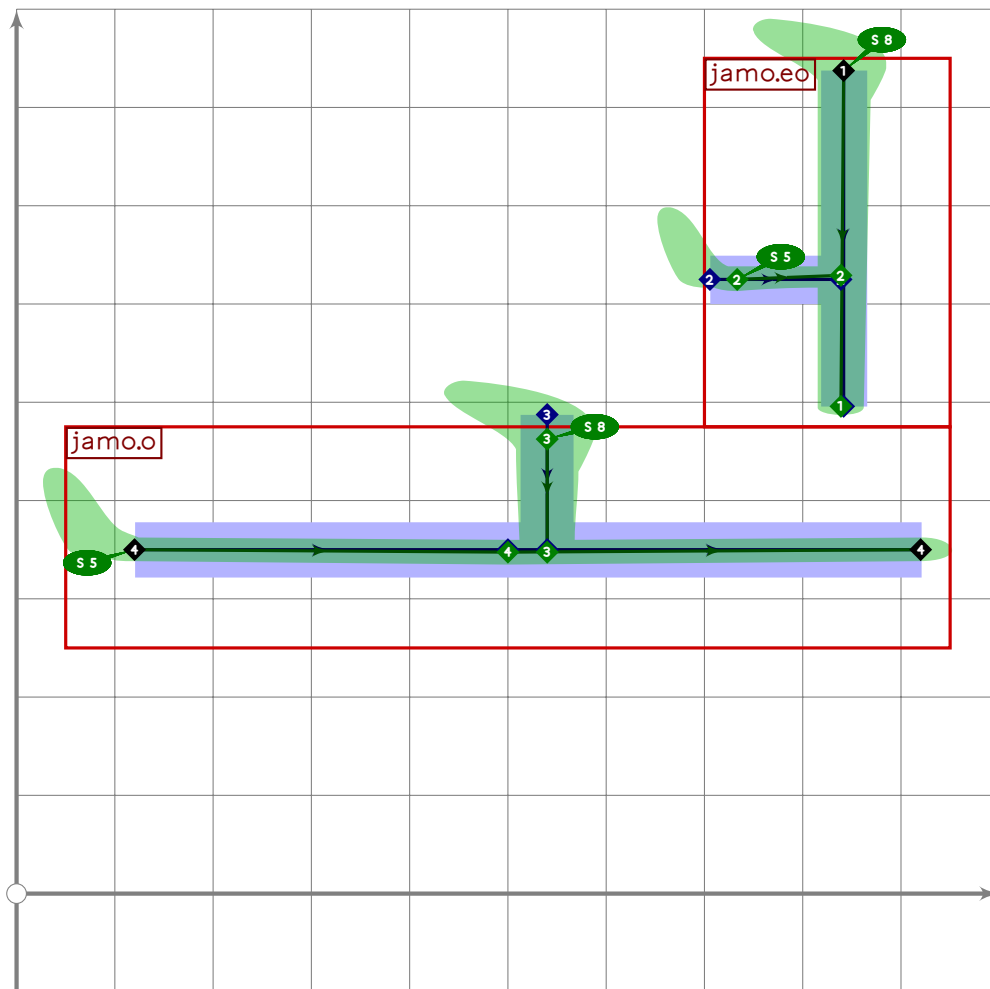
```



```

795 % hangul vowel ya-yo
796 begintsuglyph("uni1179",121);
797   hangul.combine.tb(302,312)(whatever,vixf,vox);
798   tsu_render;
799 endtsuglyph;
800

```

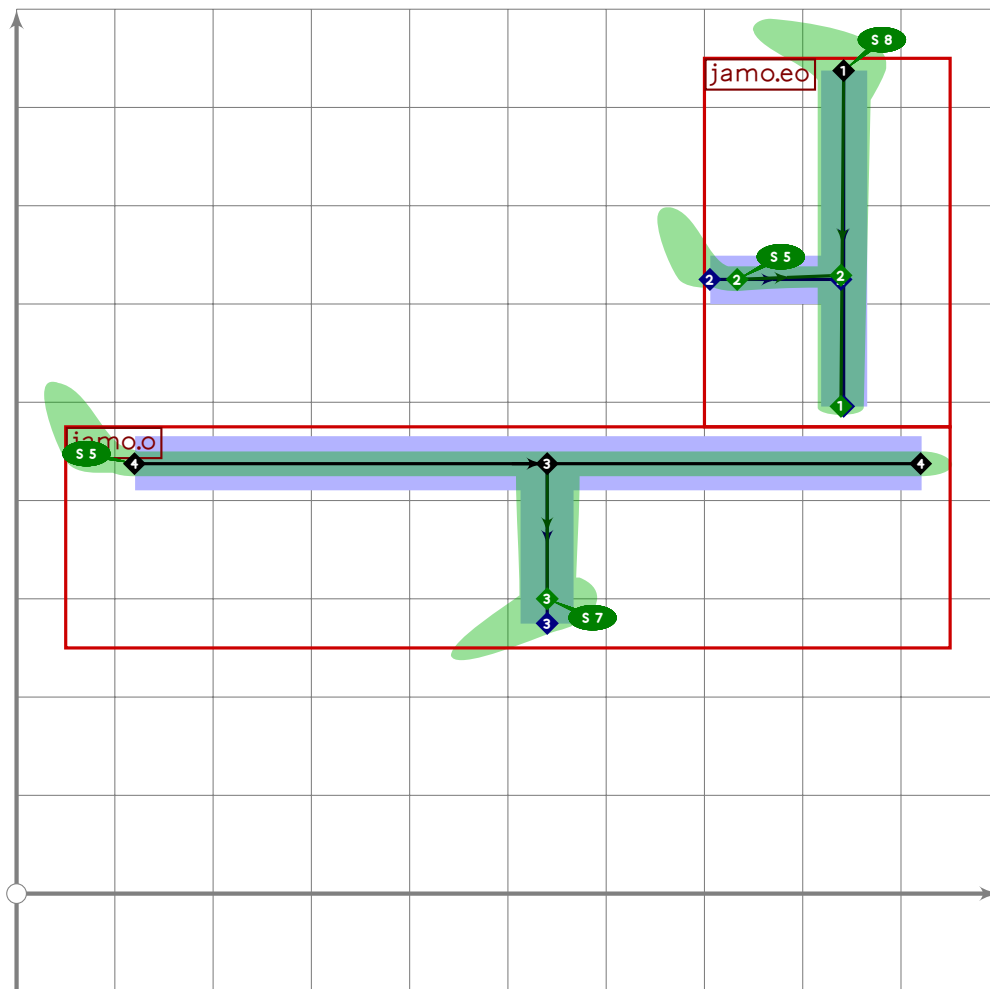


```

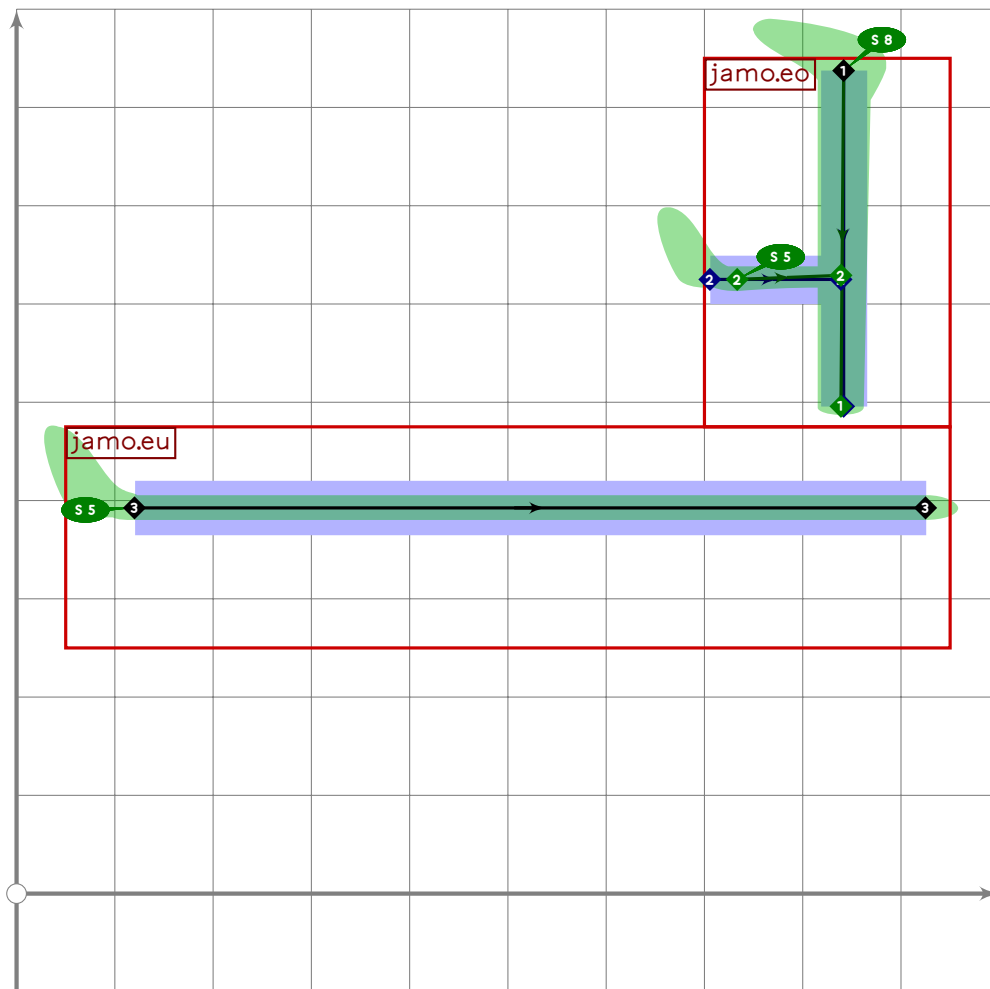
801 % hangul vowel eo-o
802 begintsuglyph("uni117A",122);
803   hangul.combine.tb(304,308)(whatever,vixf,vox);
804   tsu_render;
805 endtsuglyph;
806

```

U+117B
mande.uni117B



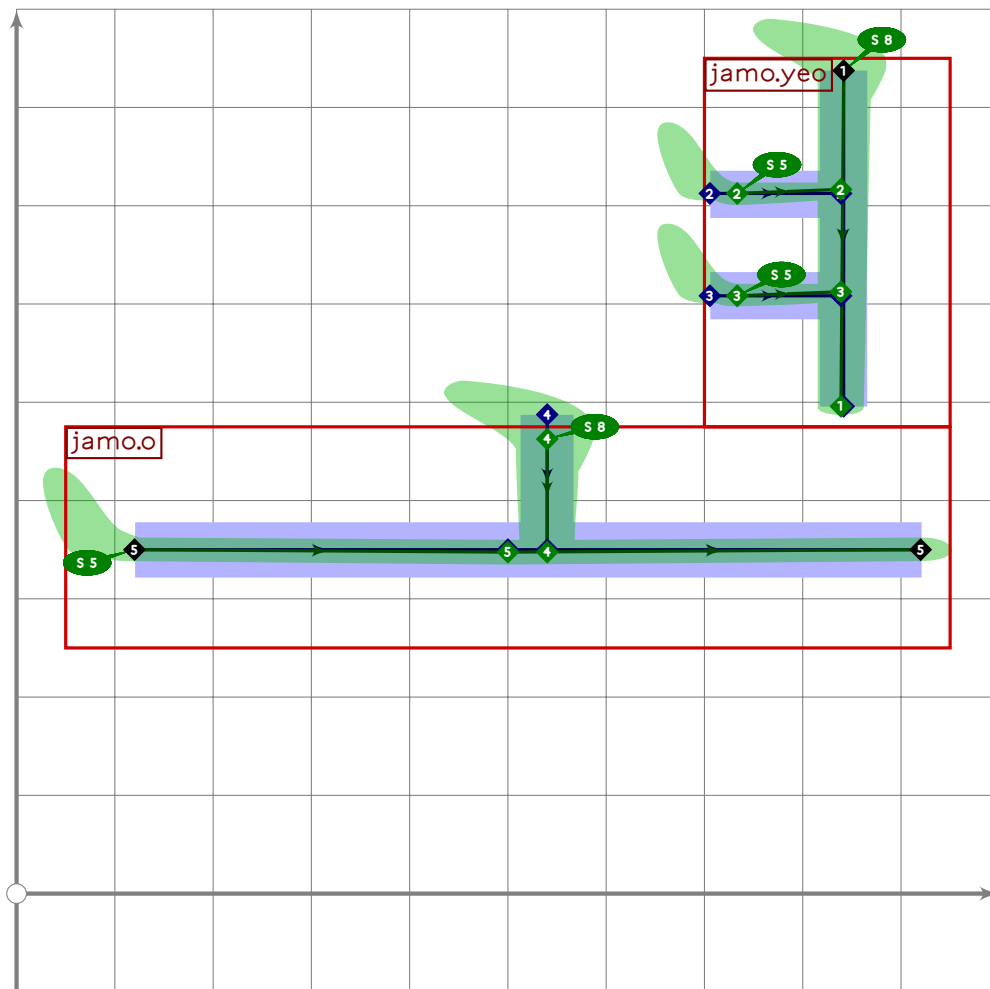
```
807 % hangul vowel eo-u
808 begintsuglyph("uni117B",123);
809 hangul.combine.tb(304,313)(whatever,vixf,vox);
810 tsu_render;
811 endtsuglyph;
812
```



```

813 % hangul vowel eo-eu
814 begintsuglyph("uni117C";124);
815   hangul.combine.tb(304,318)(whatever,vixf,vox);
816   tsu_render;
817 endtsuglyph;
818

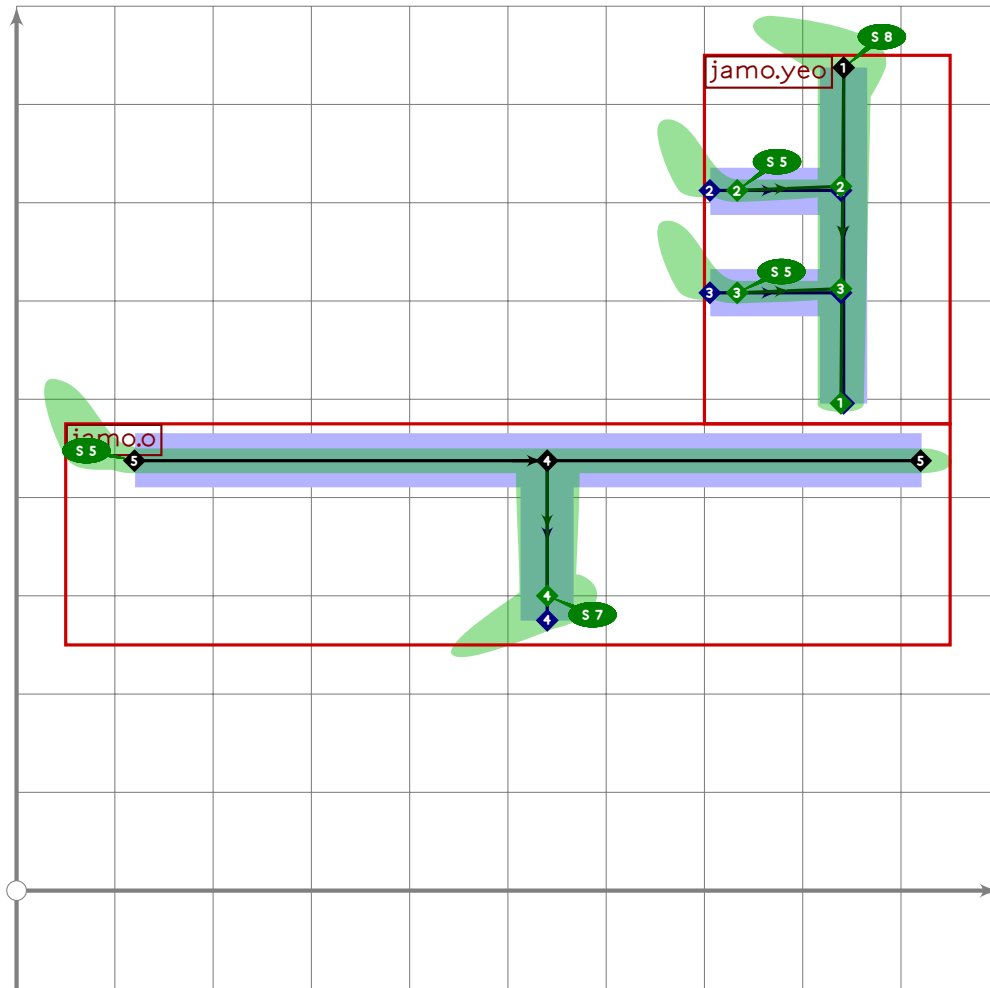
```



```

819 % hangul vowel yeo-o
820 begintsuglyph("uni117D";125);
821   hangul.combine.tb(306,308)(whatever,vixf,vox);
822   tsu_render;
823 endtsuglyph;
824

```

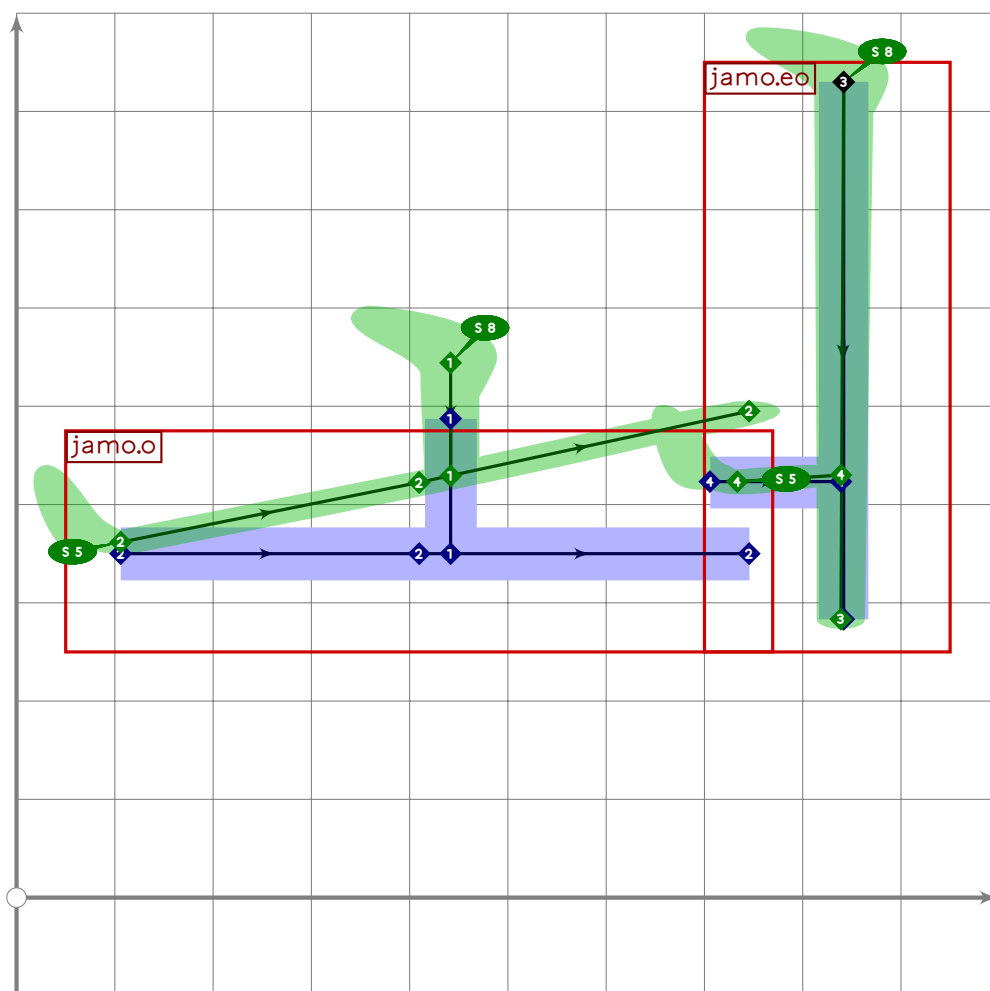



```

825 % hangul vowel yeo-u
826 begintsuglyph("uni117E";126);
827   hangul.combine.tb(306,313)(whatever,vixf,voxf);
828   tsu_render;
829 endtsuglyph;
830

```

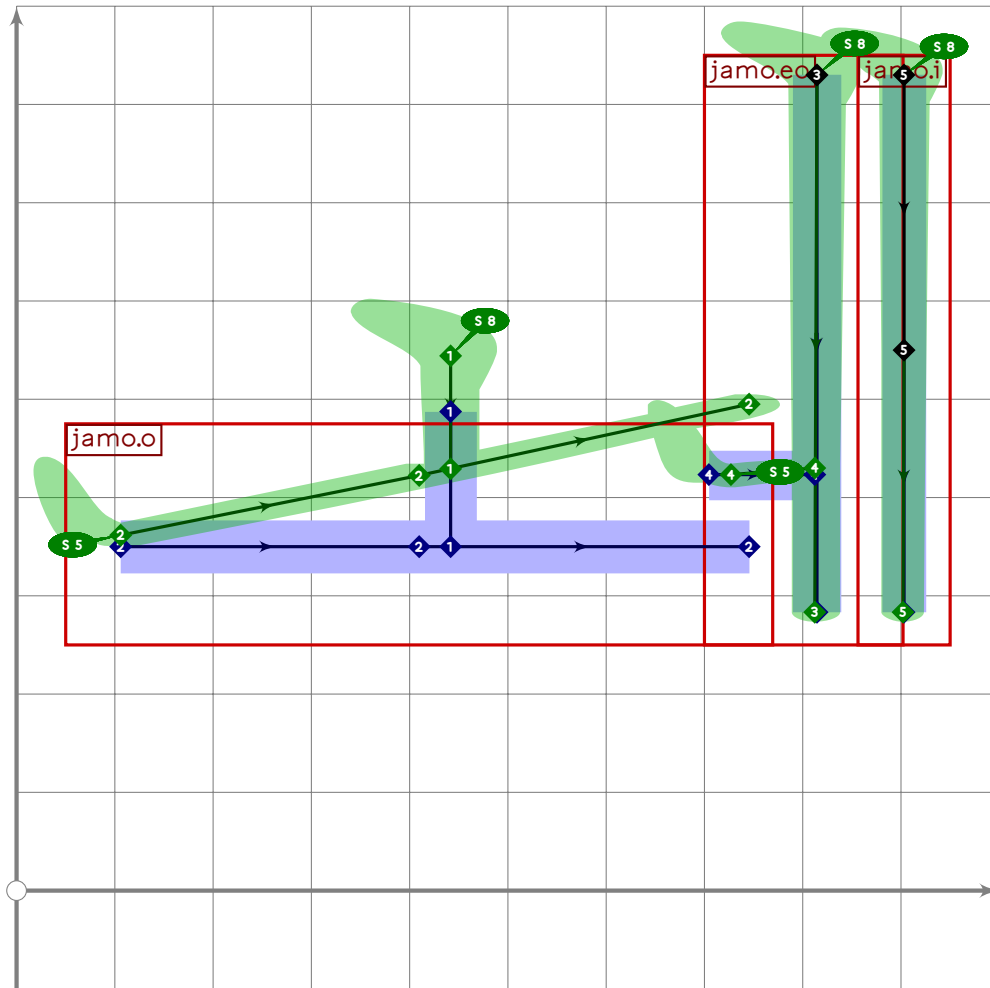
U+117F
mande.uni117F



```

831 % hangul vowel o-eo
832 begintsuglyph("uni117F";127);
833   hangul.combine.lr(308,304)(429vixf,voxf);
834   tsu_render;
835 endtsuglyph;
836

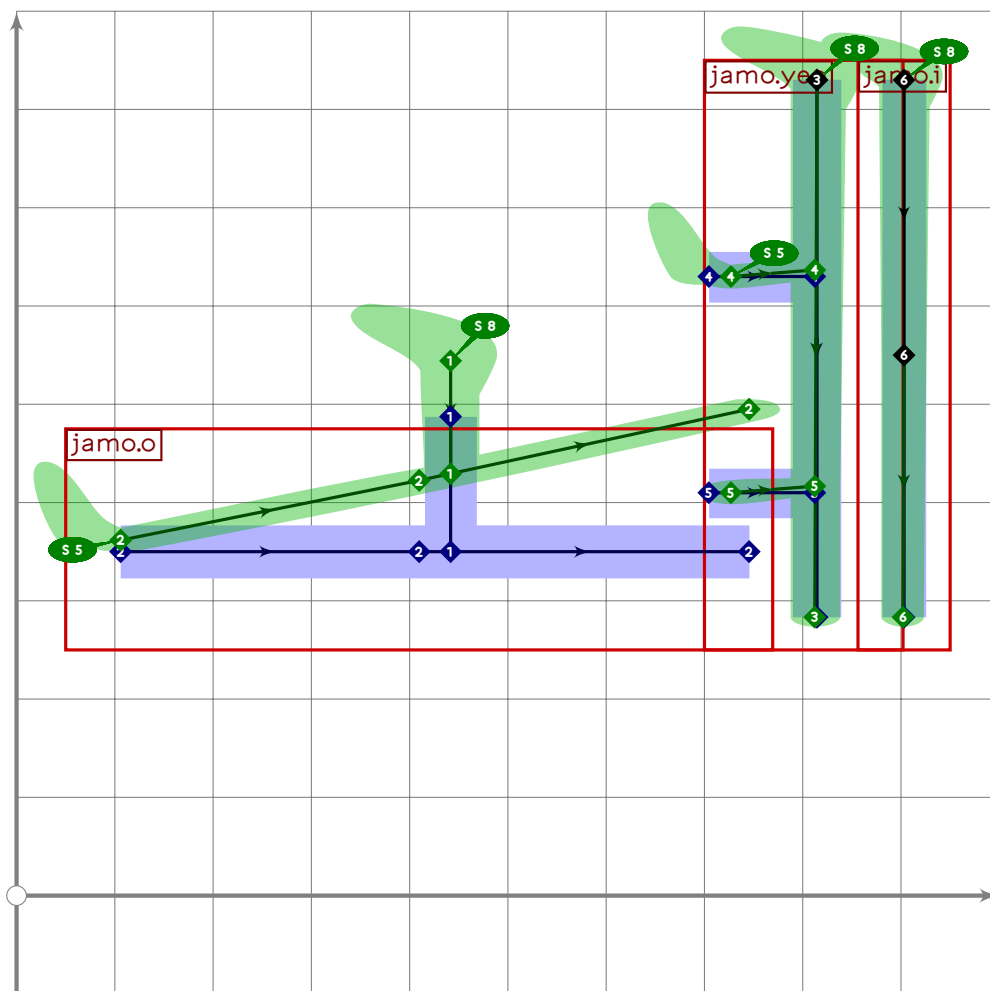
```



```

837 % hangul vowel o-e
838 begintsuglyph("uni1180",128);
839 hangul.combine.lr(308,305)(430,vixf,vox);
840 tsu_render;
841 endtsuglyph;
842

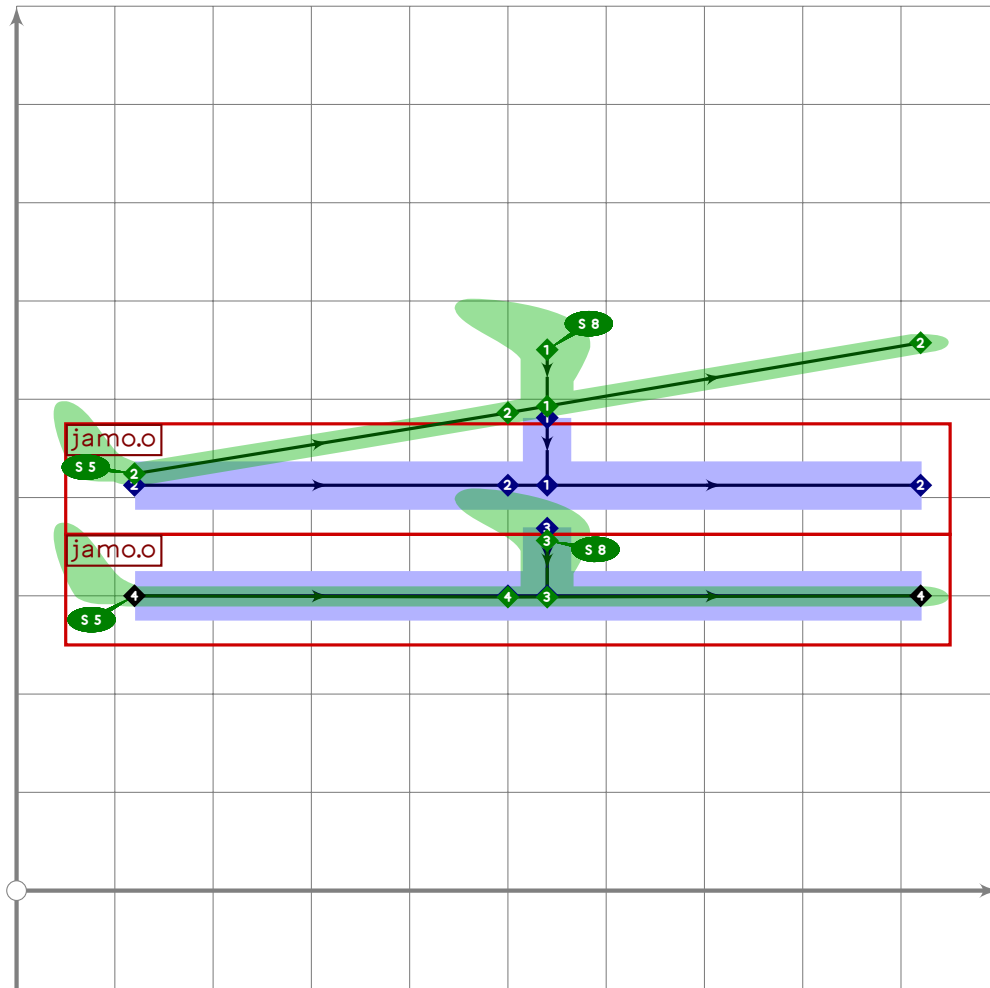
```



```

843 % hangul vowel o-ye
844 begintsuglyph("uni1181",129);
845   hangul.combine.lr(308,307)(431,vixf,voxf);
846   tsu_render;
847 endtsuglyph;
848

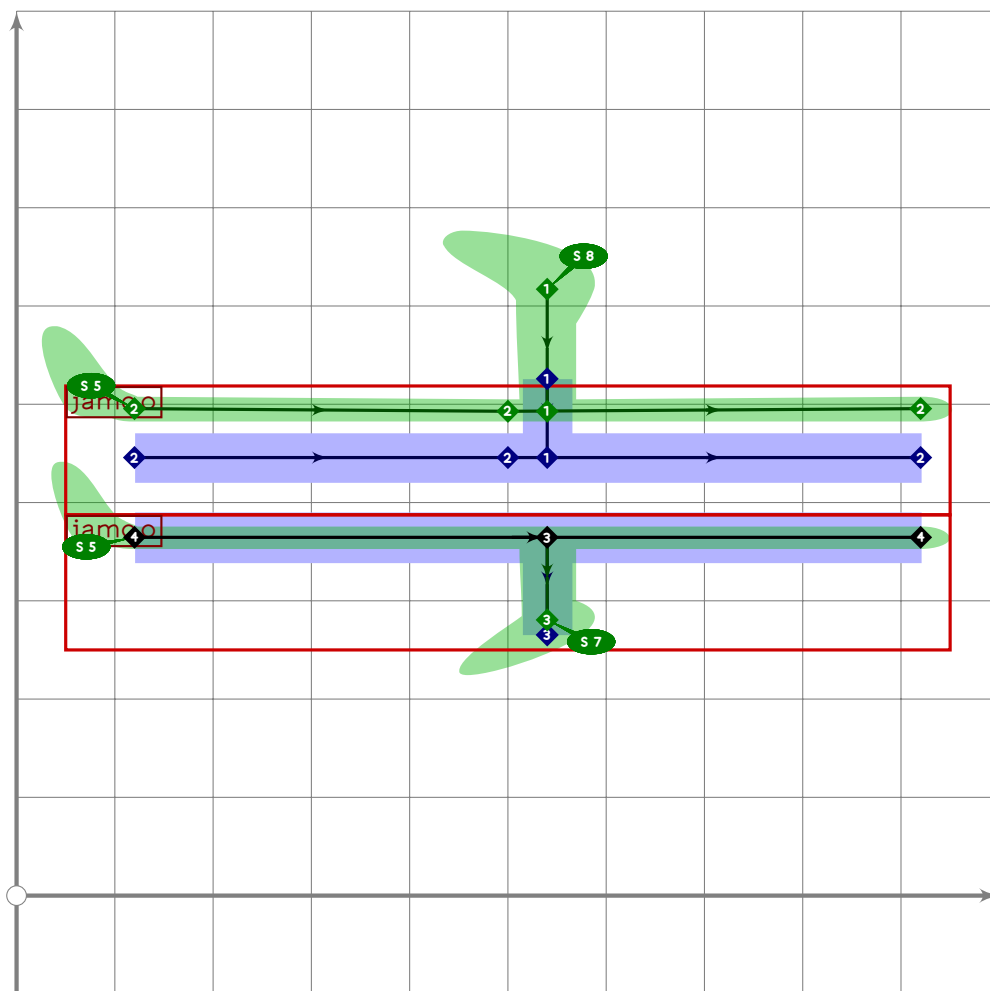
```



```

849 % hangul vowel o-o
850 begintsuglyph("uni1182";130);
851   hangul.combine.tb(308,308)(444,vixf,vox);
852   tsu_render;
853 endtsuglyph;
854

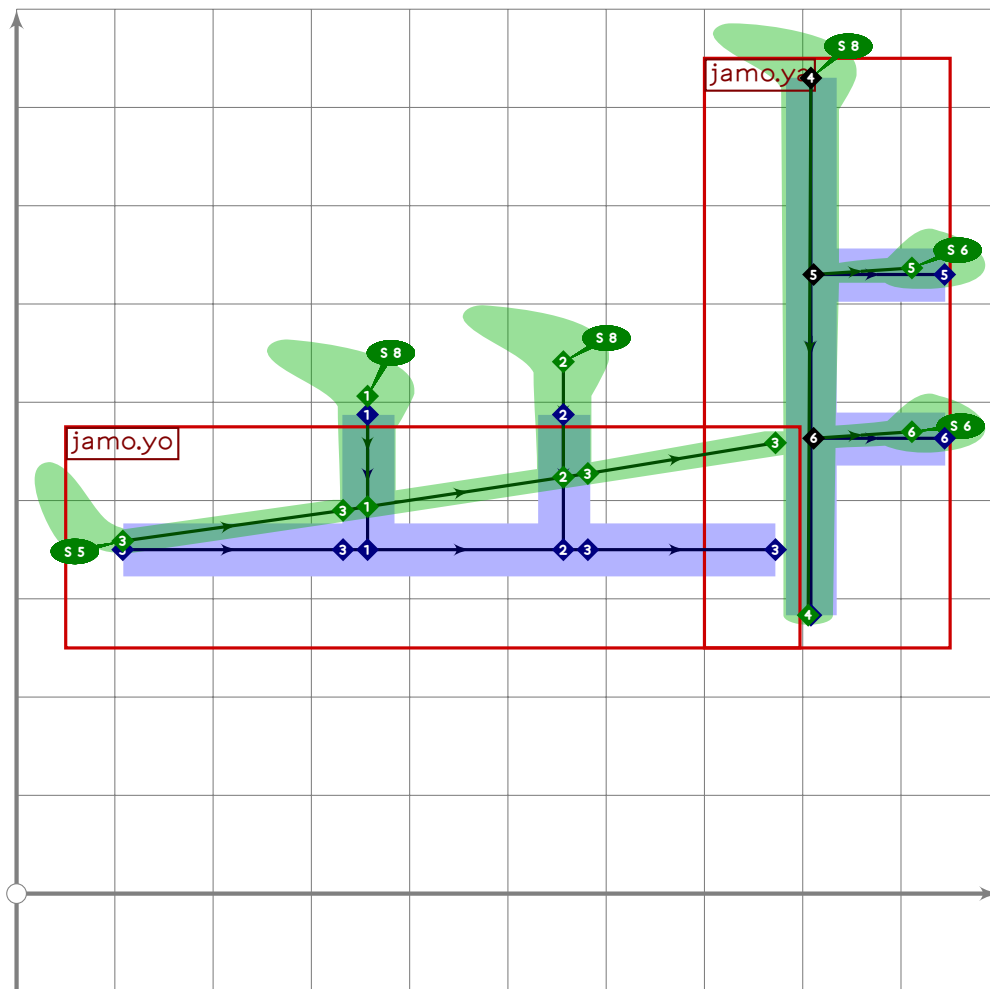
```



```

855 % hangul vowel o-u
856 begintsuglyph("uni1183";131);
857   hangul.combine.tb(308,313)(whatever;tvixf;voxf);
858   tsu_render;
859 endtsuglyph;
860

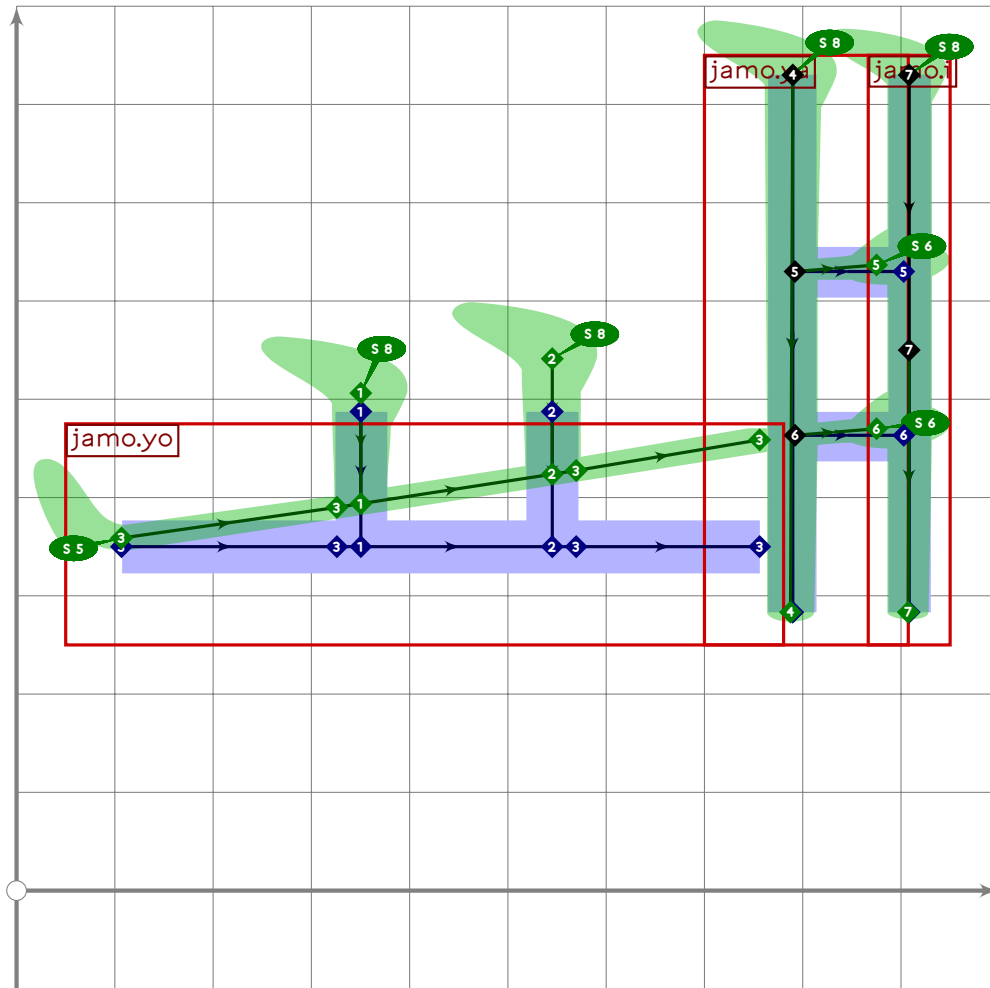
```



```

861 % hangul vowel yo-ya
862 begintsuglyph("uni1184",132);
863   hangul.combine.lr(312,302)(421,vixf,voxf);
864   tsu_render;
865 endtsuglyph;
866

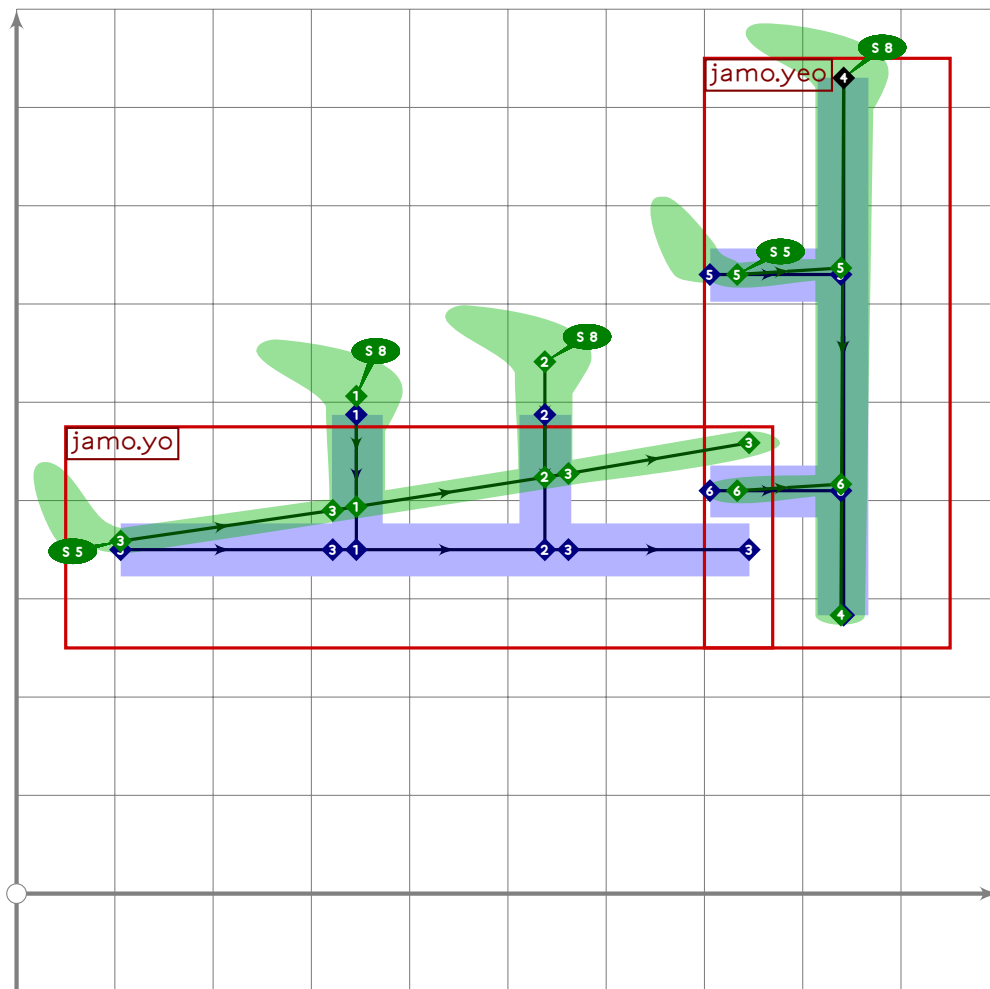
```



```

867 % hangul vowel yo-yae
868 begintsuglyph("uni1185",133);
869   hangul.combine.lr(312,303)(422,vixf,vox);
870   tsu_render;
871 endtsuglyph;
872

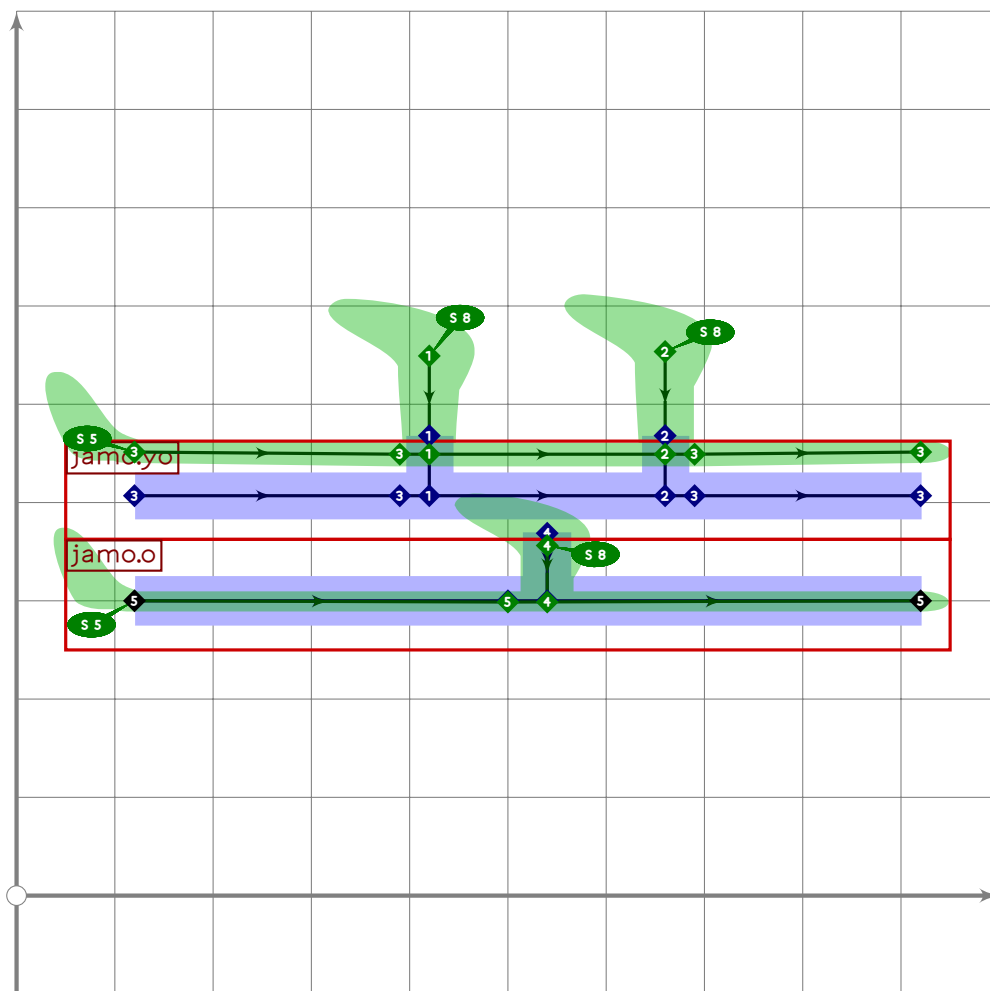
```

```

873 % hangul vowel yo-yeo
874 begintsuglyph("uni1186",134);
875   hangul.combine.lr(312,306)(432,vixf,vox);
876   tsu_render;
877 endtsuglyph;
878

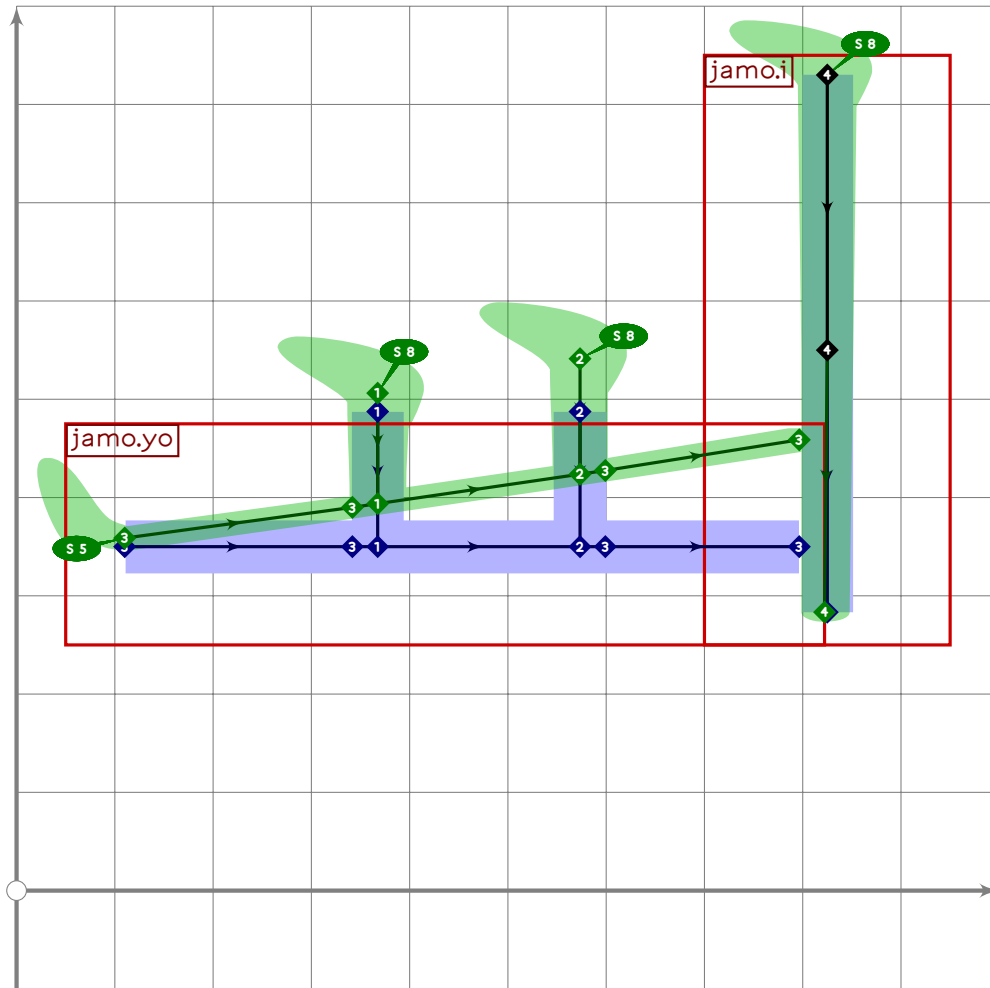
```



```

879 % hangul vowel yo-o
880 begintsuglyph("uni1187";135);
881   hangul.combine.tb(312,308)(whatever,vixf,vox);
882   tsu_render;
883 endtsuglyph;
884

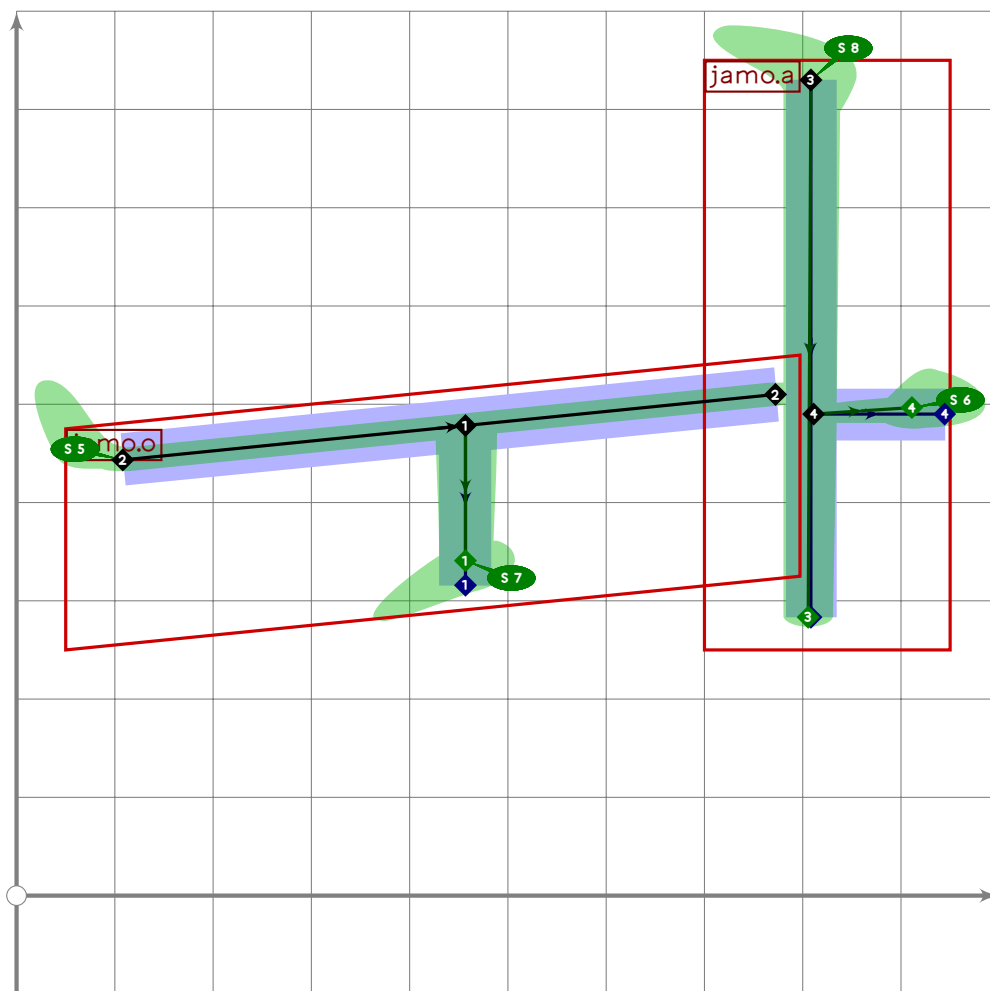
```



```

885 % hangul vowel yo-i
886 begintsuglyph("uni1188",136);
887 hangul.combine.lr(312,320)(423,vixf,voxf);
888 tsu_render;
889 endtsuglyph;
890

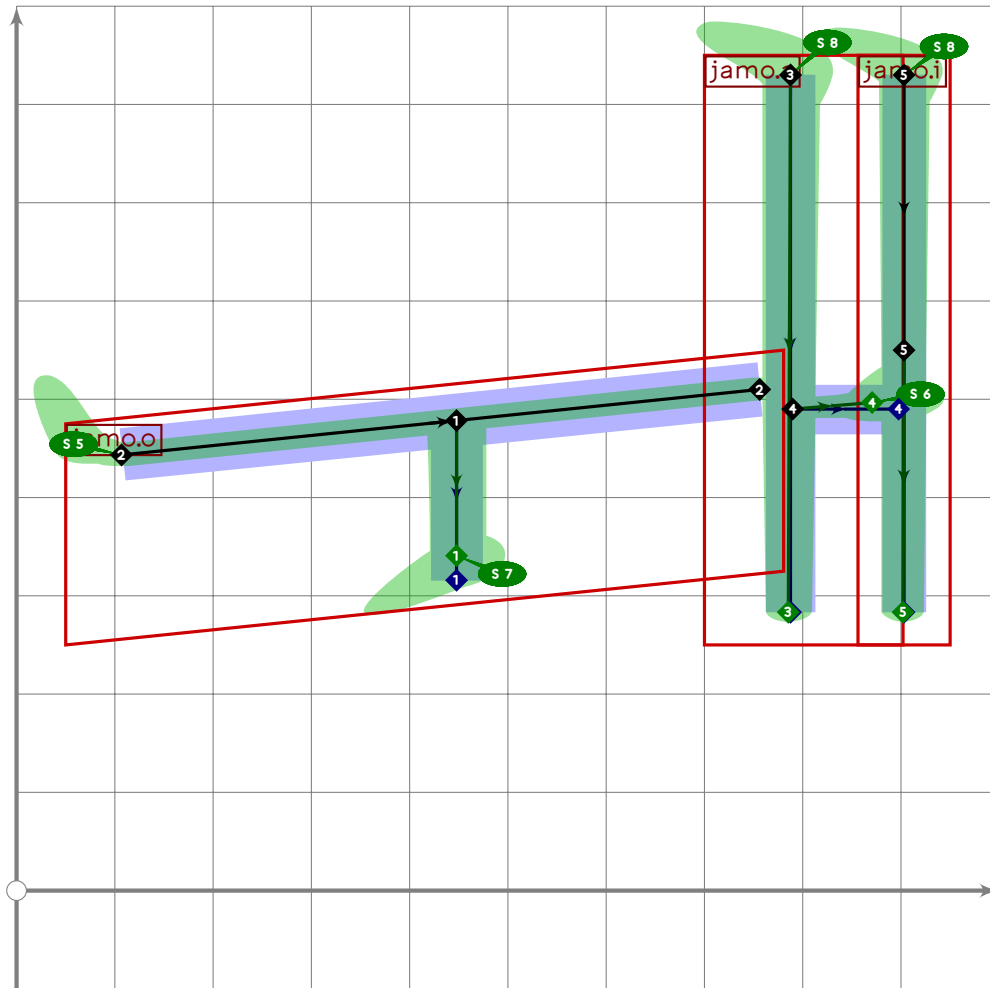
```



```

891 % hangul vowel u-a
892 begintsuglyph("uni1189";137);
893 hangul.combine.lr(313,300)(433,vixf,voxf);
894 tsu_render;
895 endtsuglyph;
896

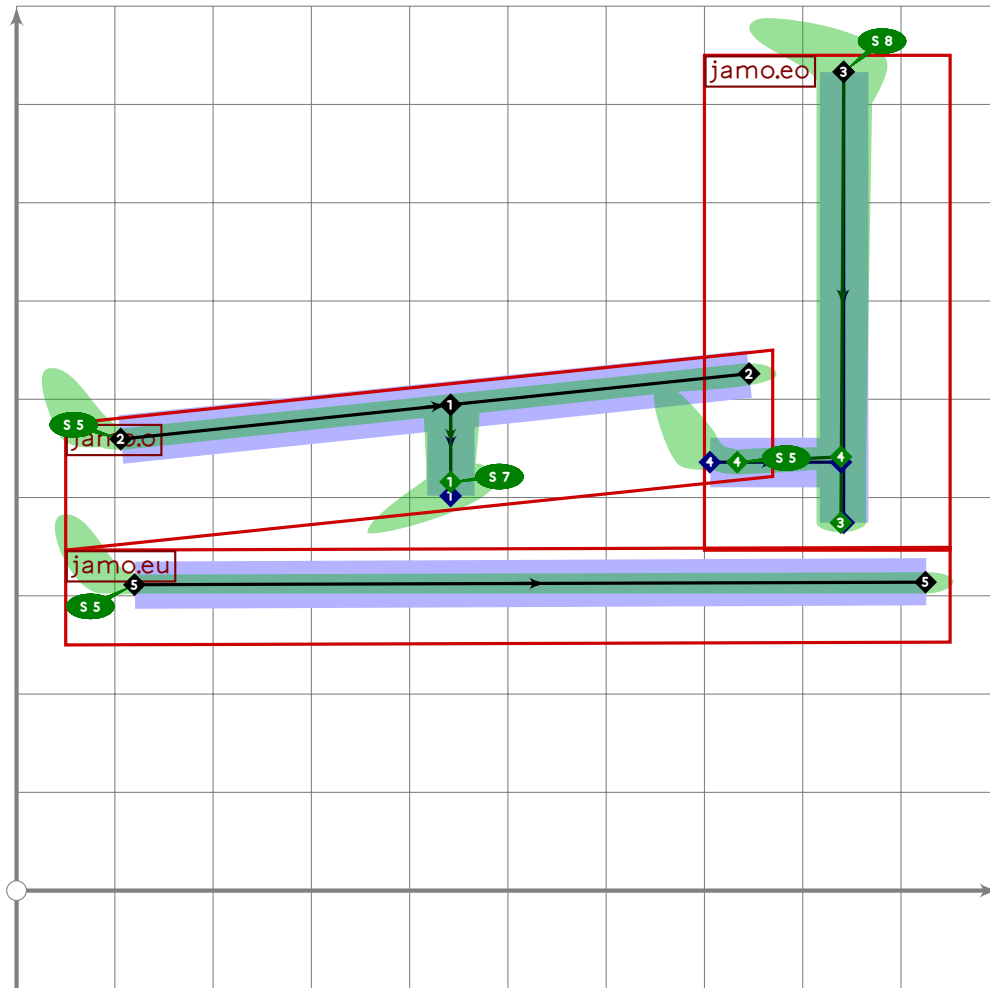
```



```

897 % hangul vowel u-ae
898 begint Suglyph("uni118A",138);
899   hangul.combine.lr(313,301)(434,vixf,voxf);
900   tsu_render;
901 endtsuglyph;
902

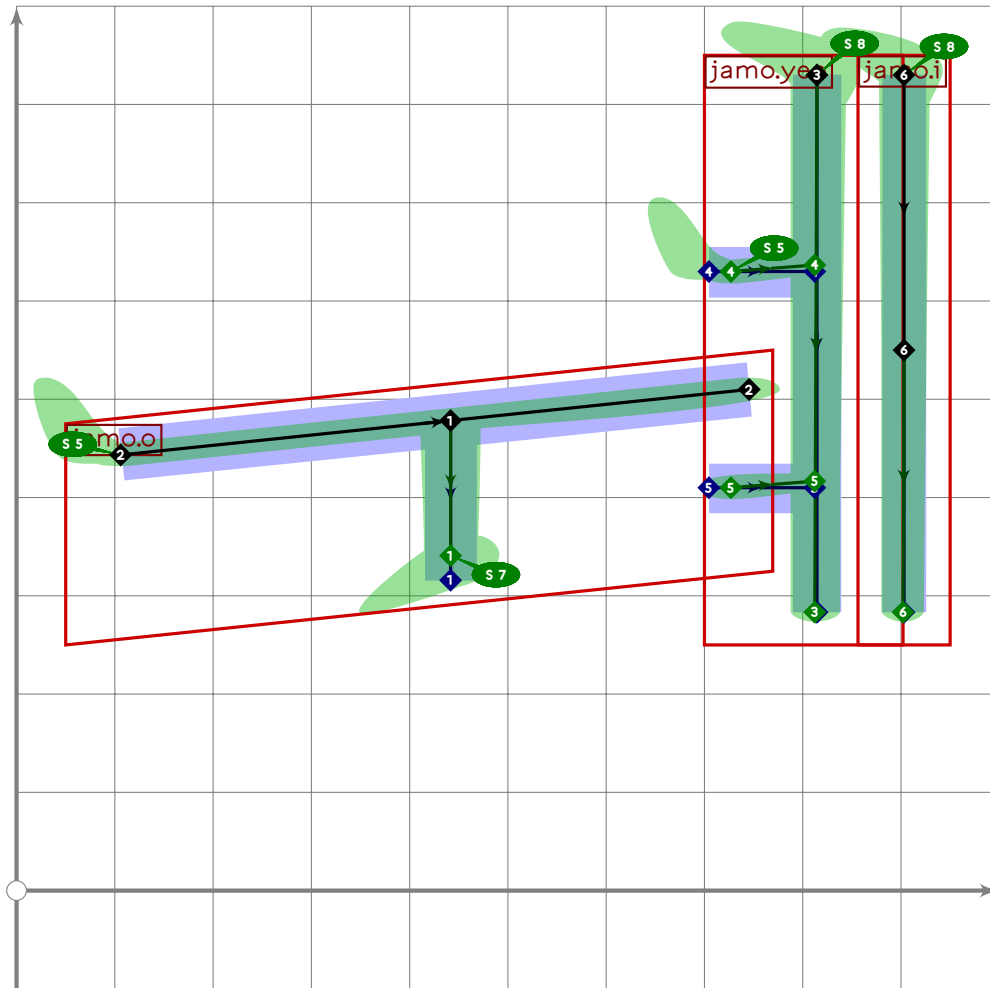
```



```

903 % hangul vowel u-eo-eu
904 begintsuglyph("uni118B",139);
905   hangul.combine.tb(314,318)(435,vixf,vox);
906   tsu_render;
907 endtsuglyph;
908

```

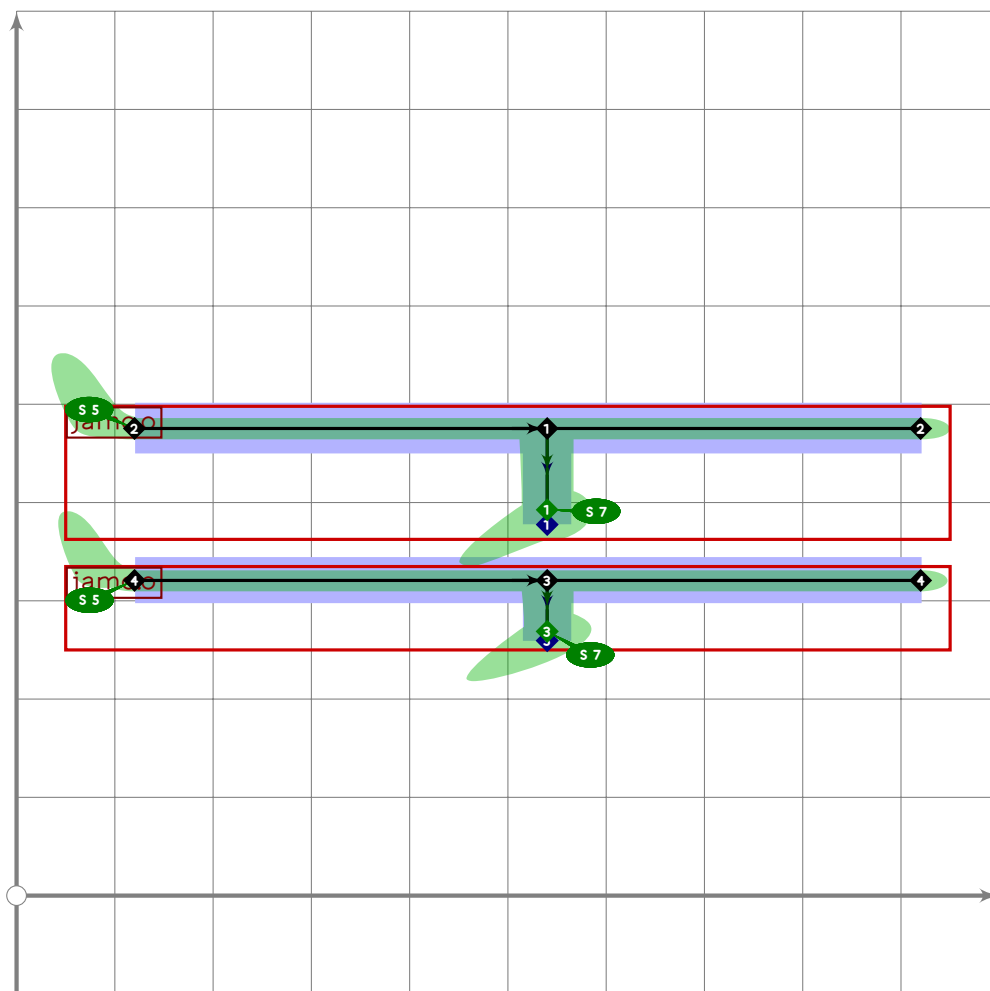


```

909 % hangul vowel u-ye
910 begint Suglyph("uni118C",140);
911   hangul.combine.lr(313,307)(436,vixf,voxf);
912   tsu_render;
913 endtsuglyph;
914

```

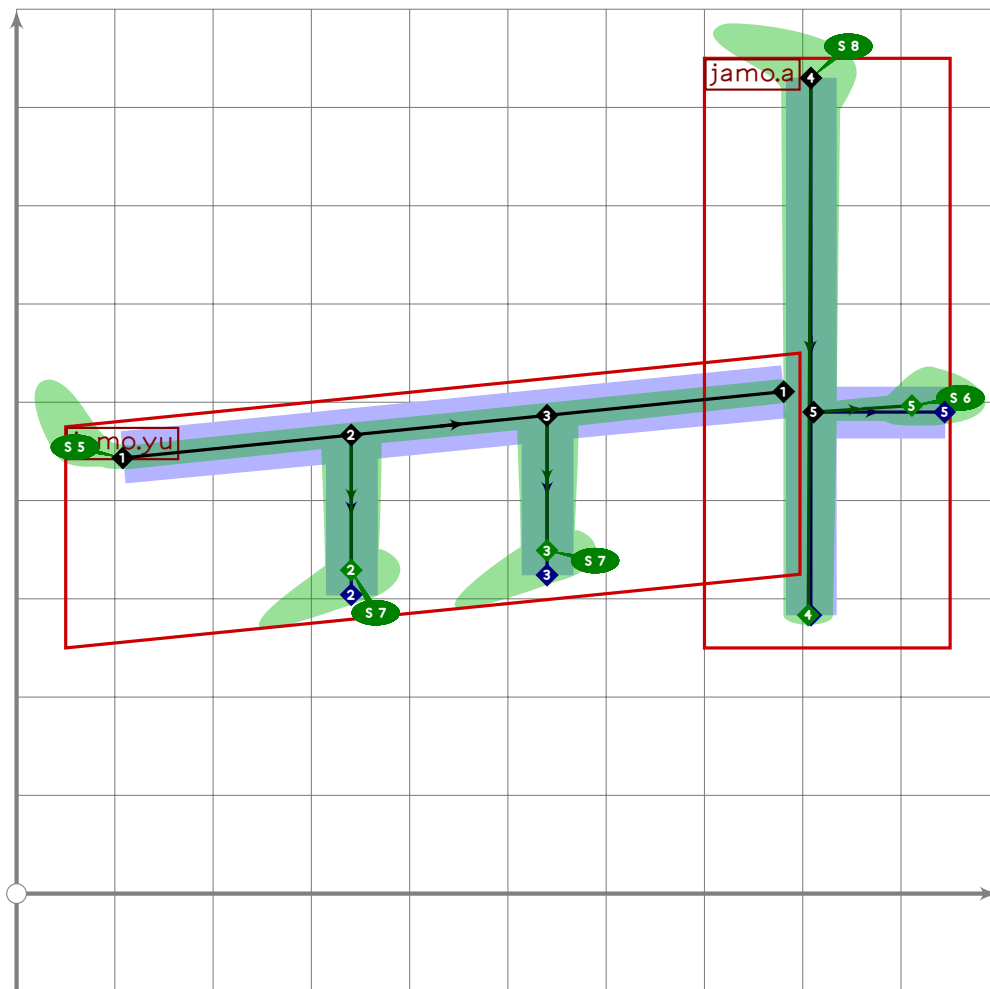
U+118D
mande.uni118D



```

915 % hangul vowel u-u
916 begintsuglyph("uni118D",141);
917   hangul.combine.tb(313,313)(whatever,vixf,vox);
918   tsu_render;
919 endtsuglyph;
920

```

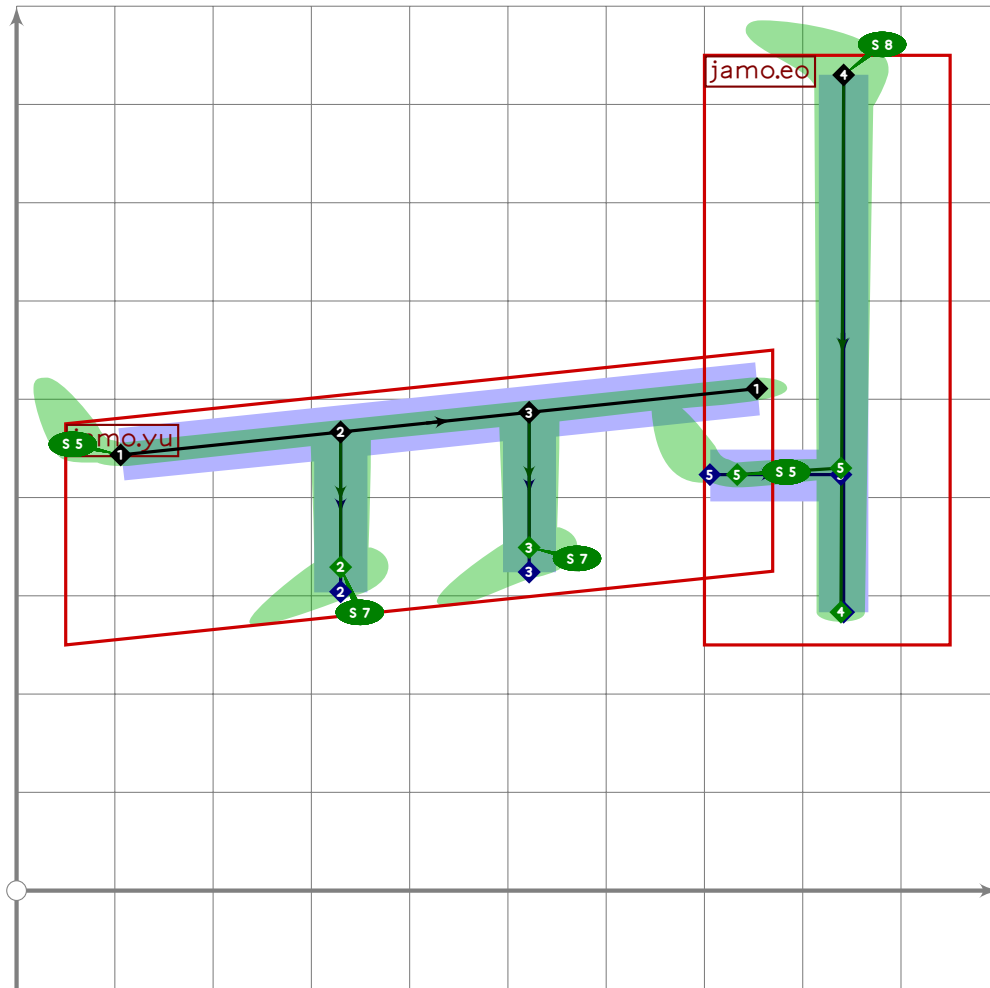



```

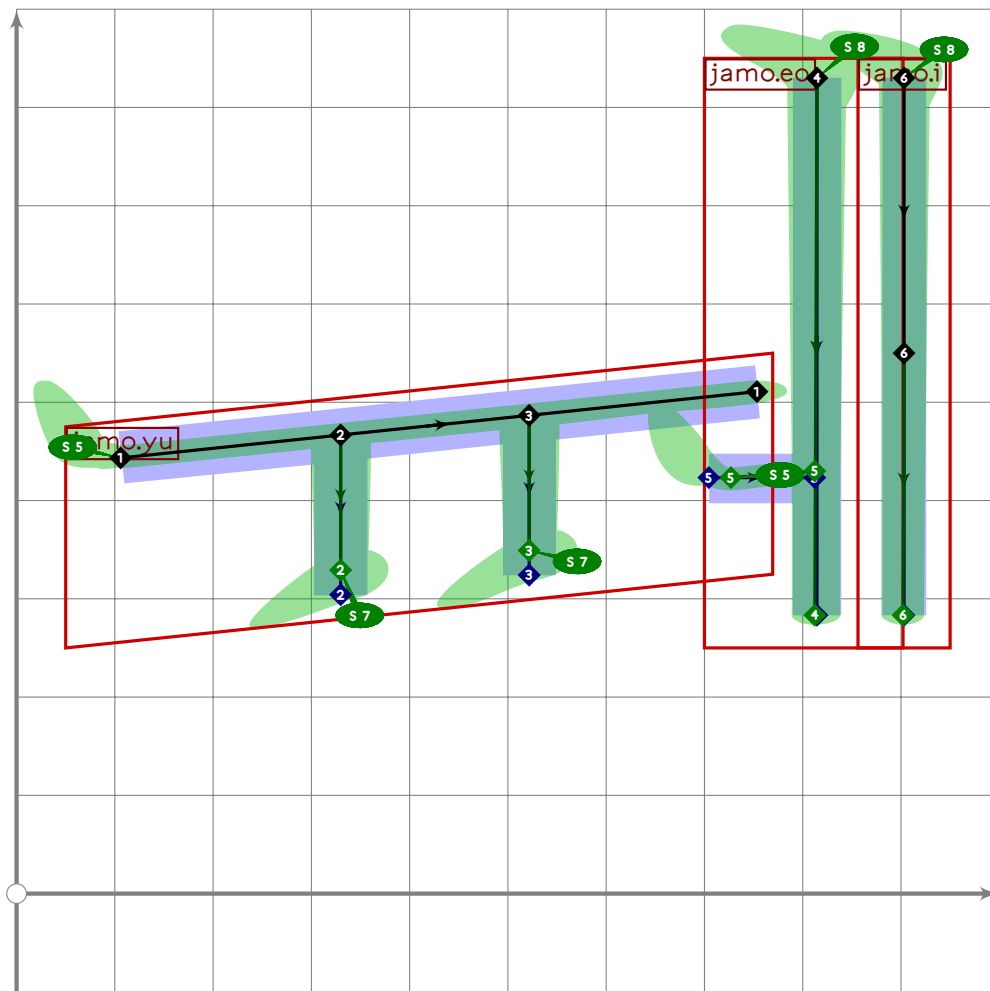
921 % hangul vowel yu-a
922 begintsuglyph("uni118E",142);
923   hangul.combine.lr(317,300)(437,vixf,voxf);
924   tsu_render;
925 endtsuglyph;
926

```

U+118F
mande.uni118F



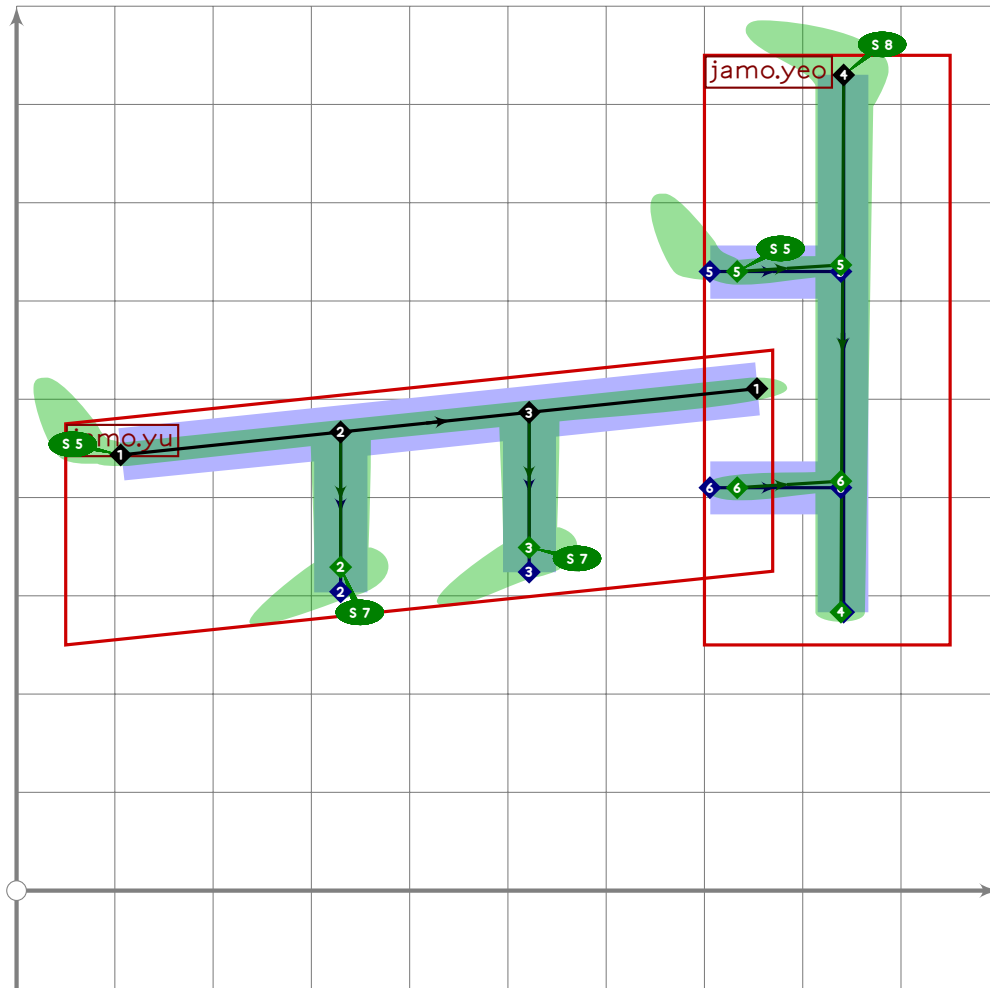
```
927 % hangul vowel yu-eo
928 begint Suglyph("uni118F",143);
929   hangul.combine.lr(317,304)(438,vixf,vox f);
930   tsu _render;
931 endtsuglyph;
932
```



```

933 % hangul vowel yu-e
934 begint Suglyph("uni1190",144);
935   hangul.combine.lr(317,305)(439,vixf,vox,f);
936   tsu_render;
937 endtsuglyph;
938

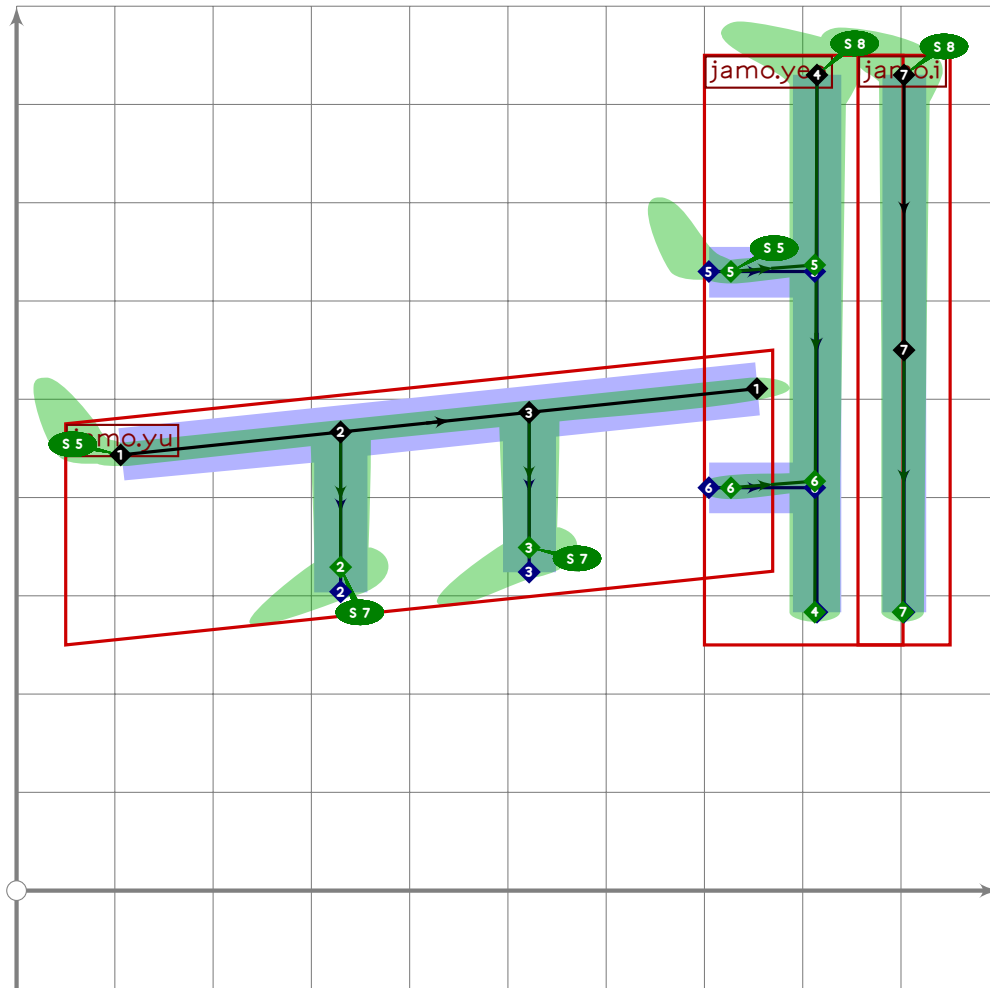
```



```

939 % hangul vowel yu-yeo
940 begint Suglyph("uni1191",145);
941   hangul.combine.lr(317,306)(424,vixf,vox);
942   tsu_render;
943 endtsuglyph;
944

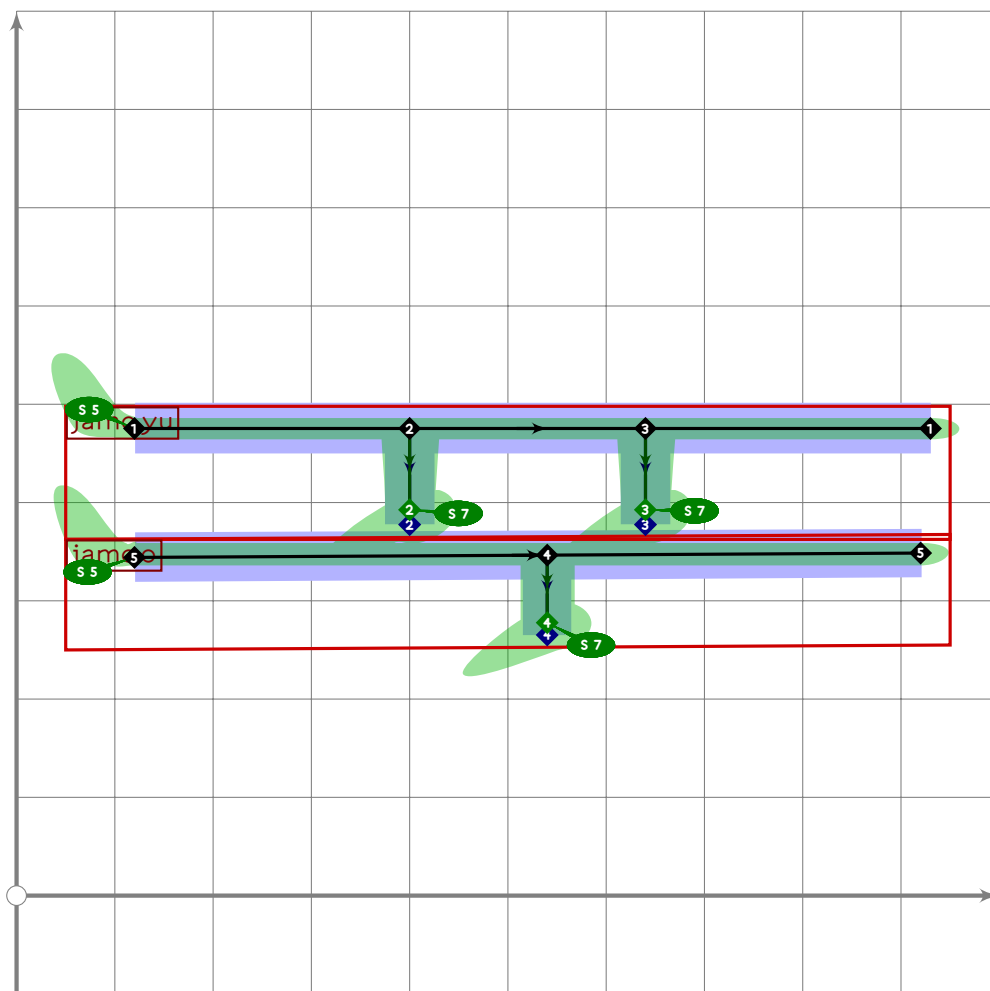
```



```

945 % hangul vowel yu-ye
946 begint Suglyph("uni1192",146);
947   hangul.combine.lr(317,307)(425,vixf,vox);
948   tsu_render;
949 endtsuglyph;
950

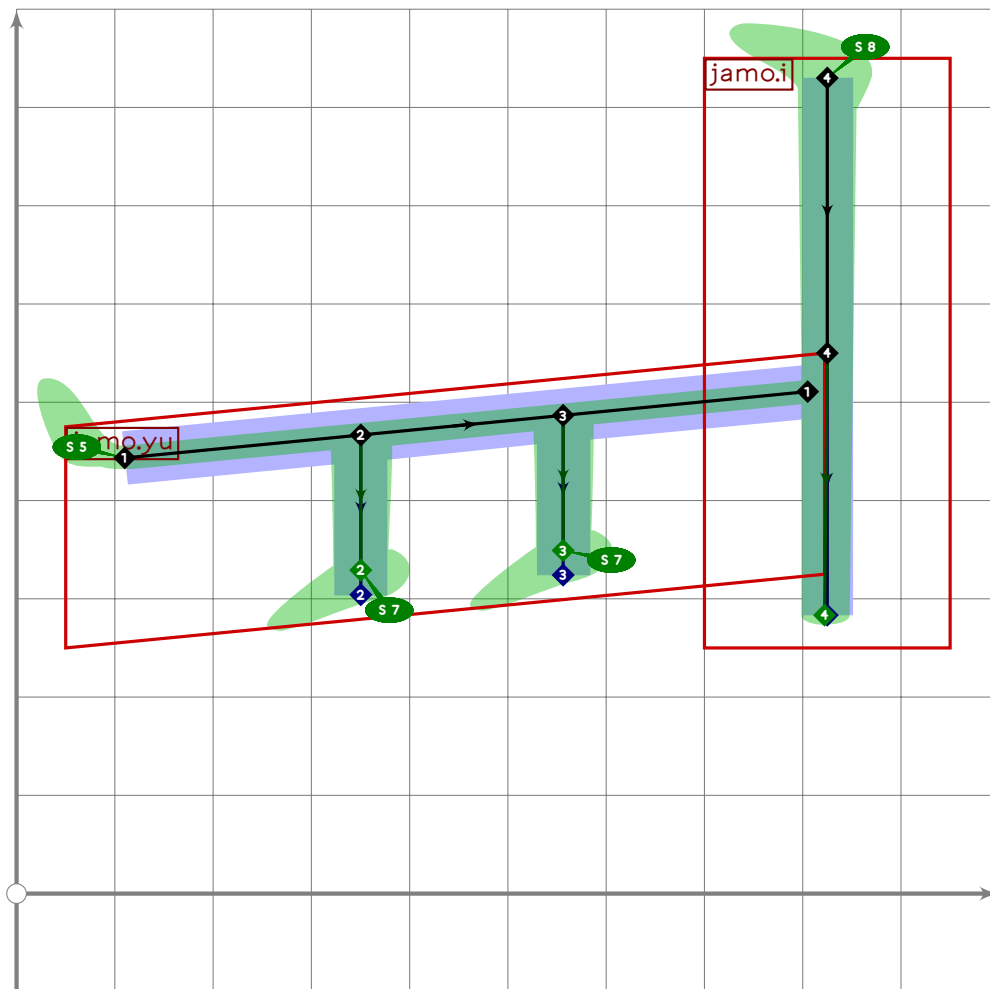
```



```

951 % hangul vowel yu-u
952 beginsuglyph("uni1193",147);
953   hangul.combine.tb(317,313)(whatever,vixf,vox);
954   tsu_render;
955 endtsuglyph;
956

```

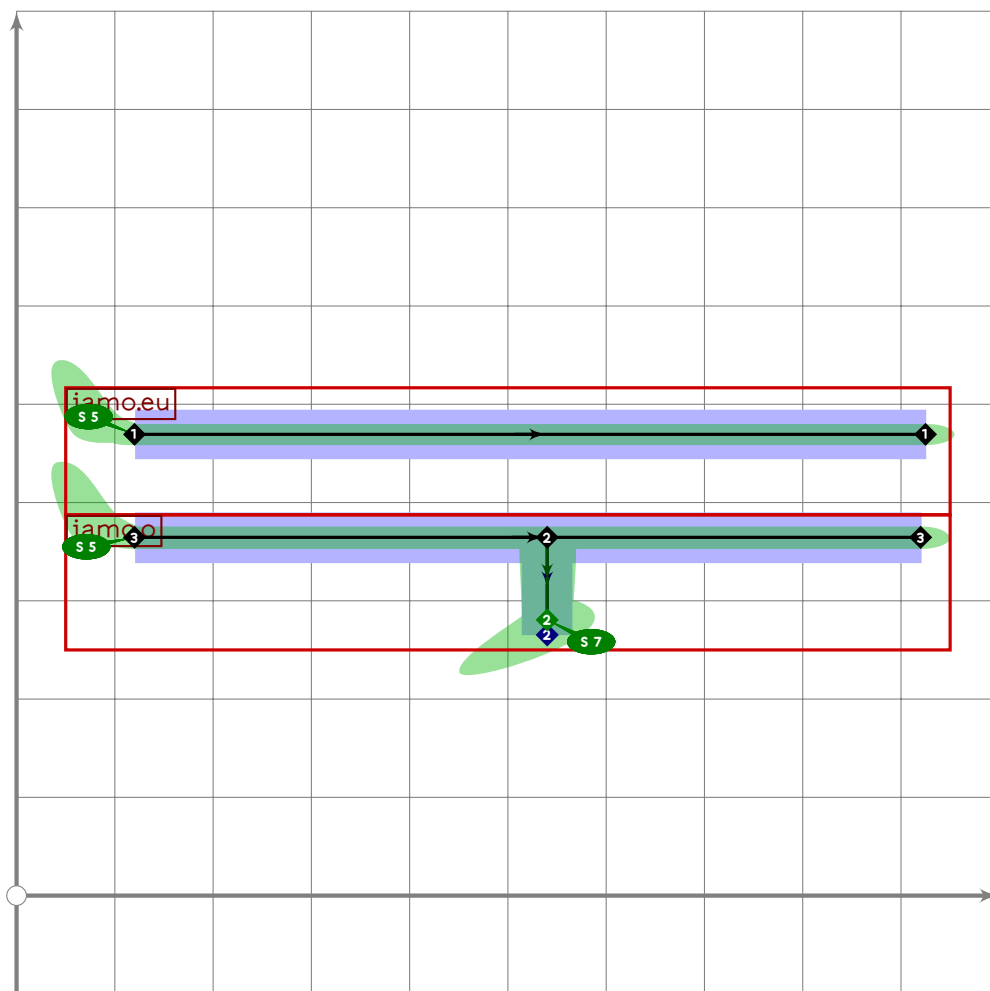


```

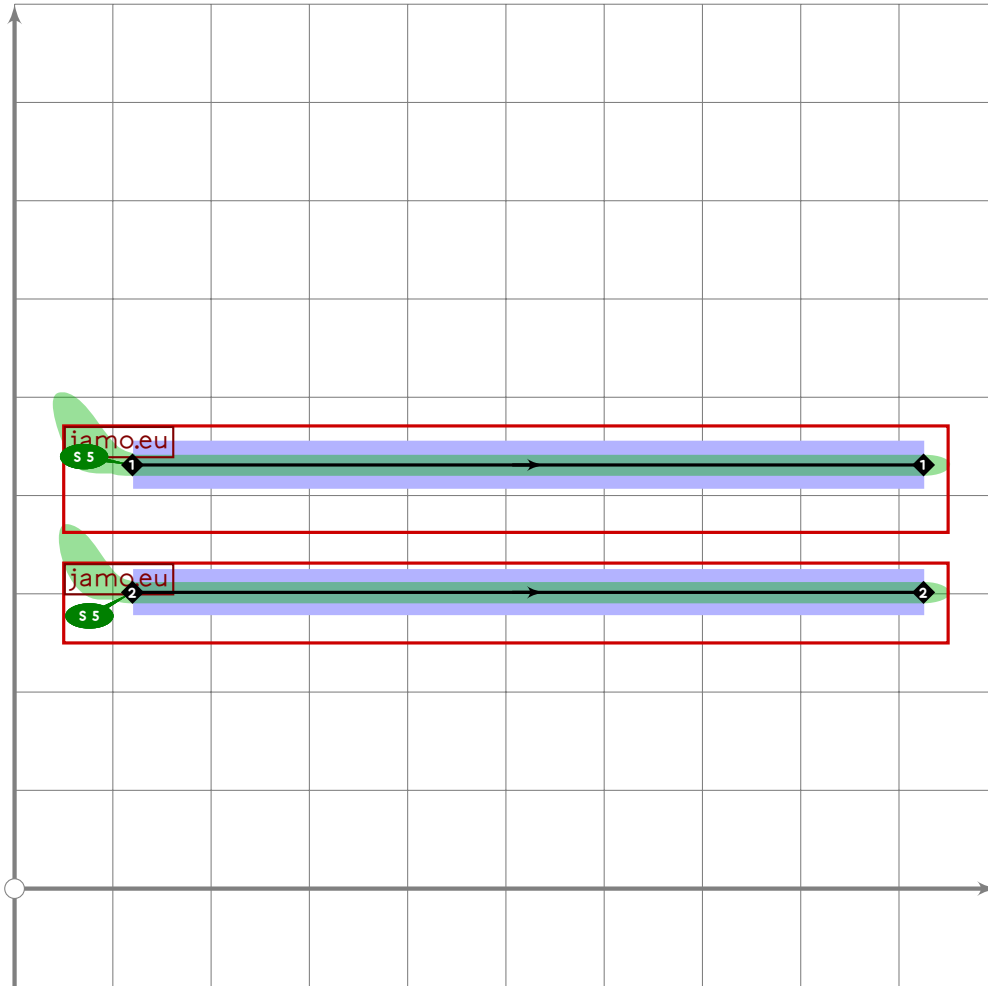
957 % hangul vowel yu-i
958 begintsuglyph("uni1194";148);
959   hangul.combine.lr(317,320)(426,vixf,vox);
960   tsu_render;
961   endtsuglyph;
962

```

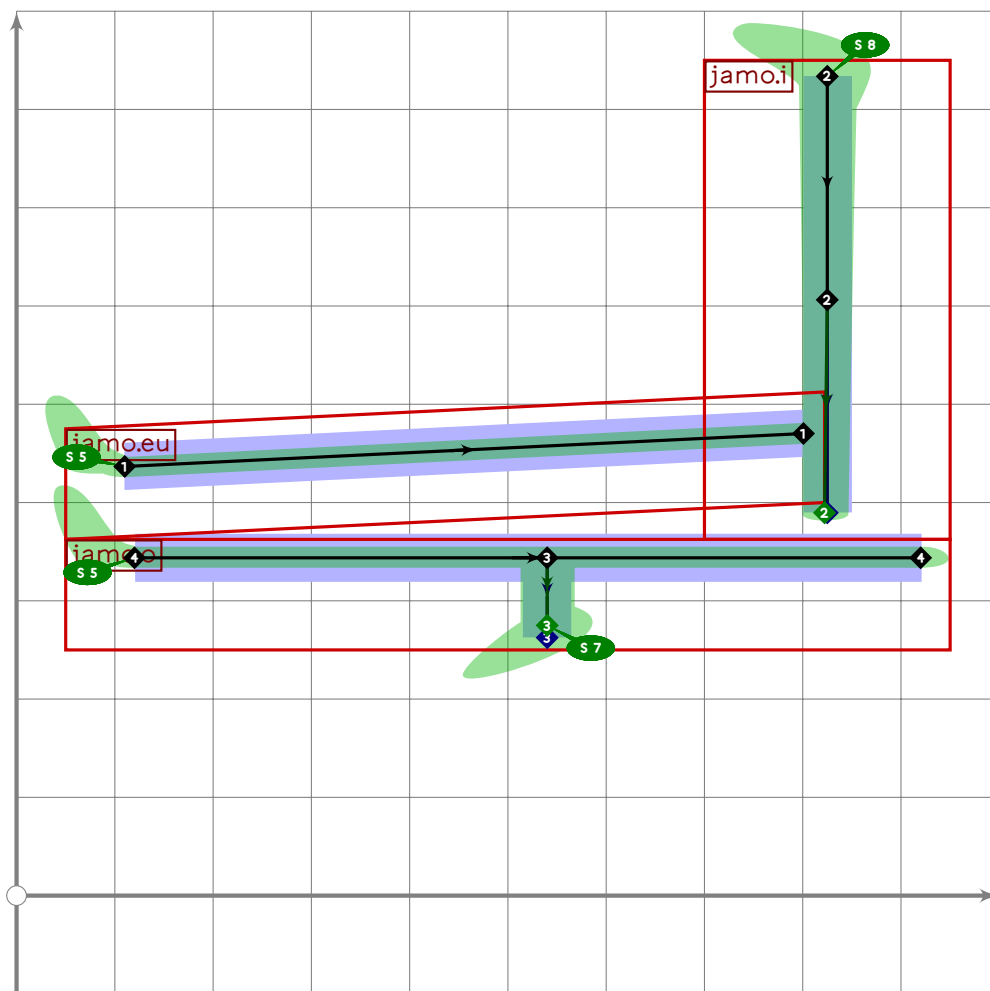
U+1195
mande.uni1195



```
963 % hangul vowel eu-u
964 begintsuglyph("uni1195",149);
965   hangul.combine.tb(318,313)(whatever,tvixf,vox f);
966   tsu_render;
967 endtsuglyph;
968
```

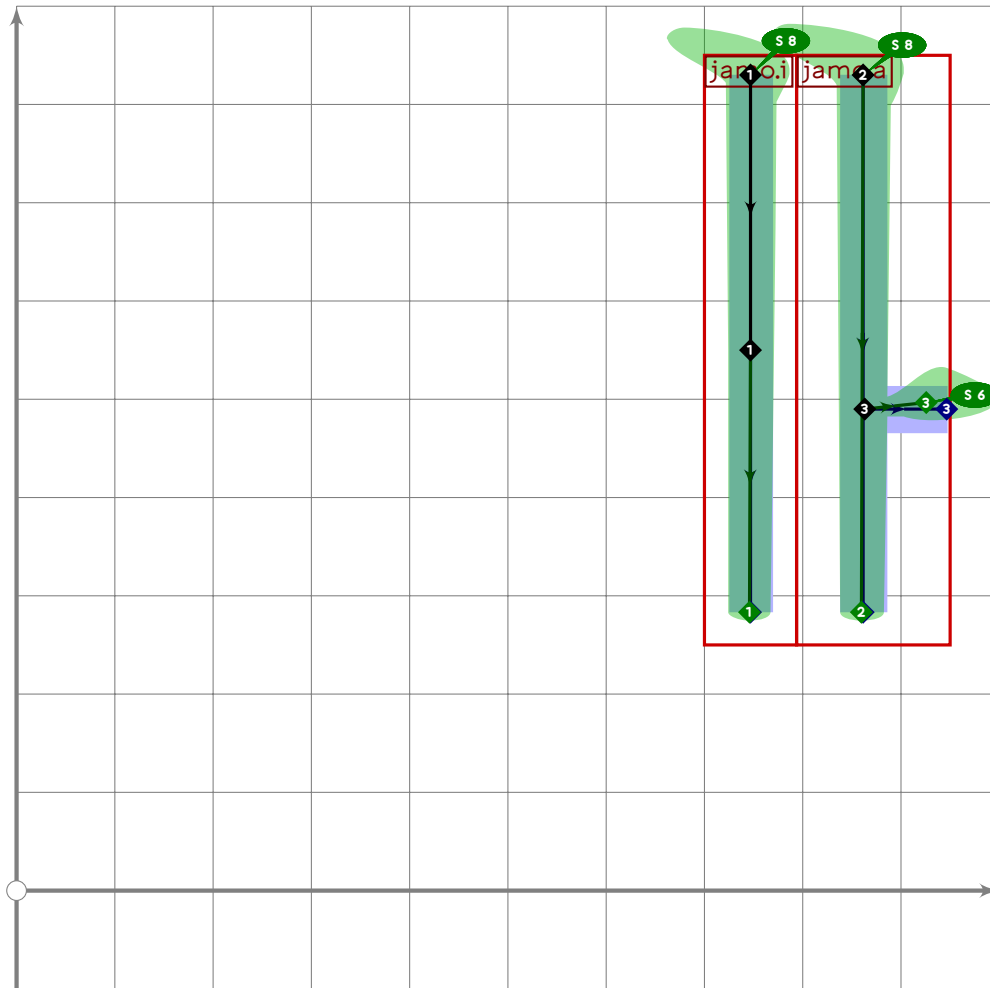
```
969 % hangul vowel eu-eu
970 beginsuglyph("uni1196",150);
971 hangul.combine.tb(318,318)(whatever,vixf,vox);
972 tsu_render;
973 endsuglyph;
974
```



```

975 % hangul vowel yi-u
976 begintsuglyph("uni1197";151);
977 hangul.combine.tb(319,313)(440,vixf,vox);
978 tsu_render;
979 endtsuglyph;
980

```

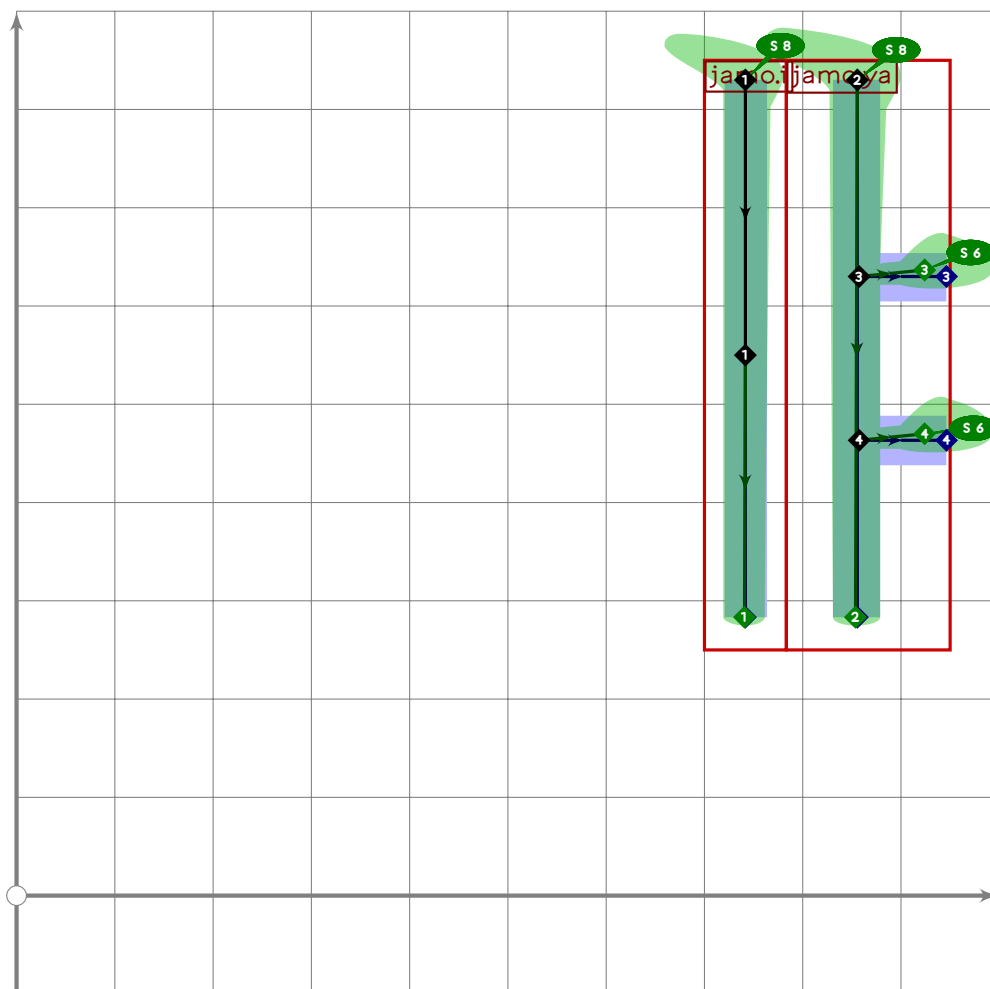


```

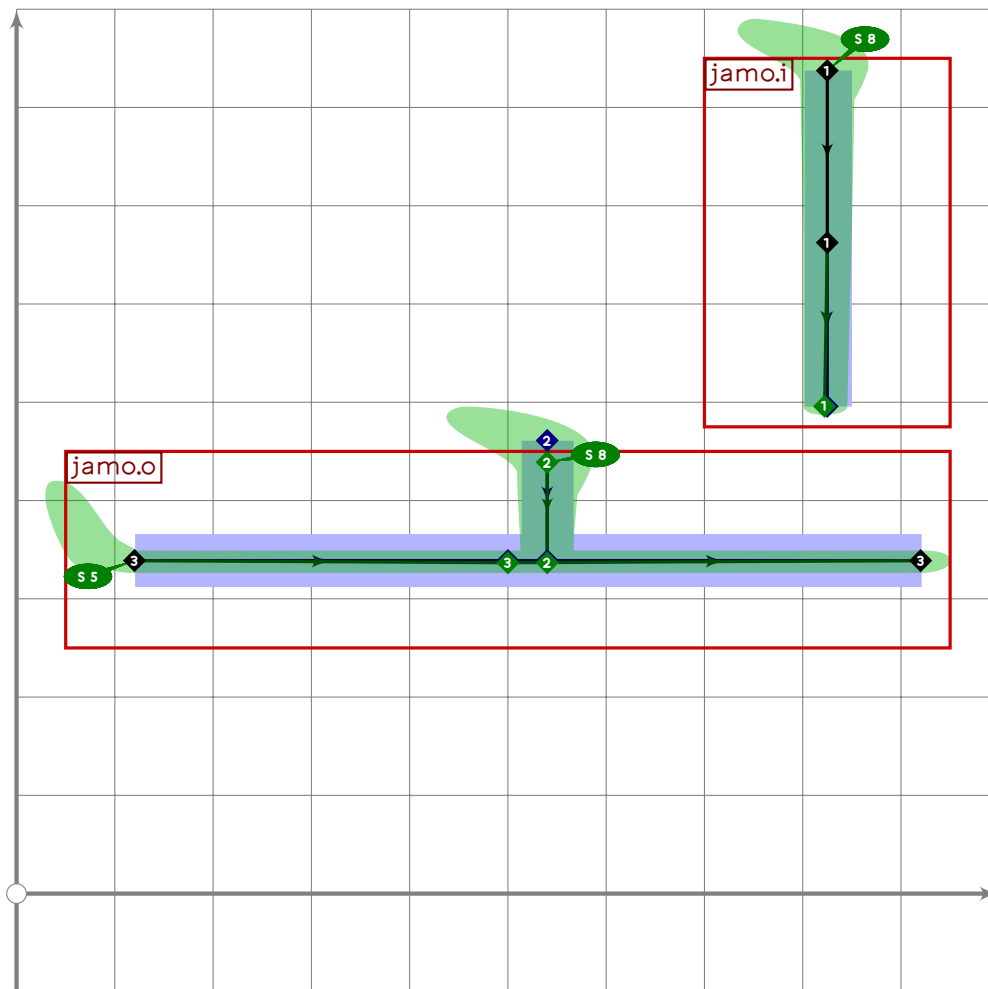
981 % hangul vowel i-a
982 begintsuglyph("uni1198",152);
983   hangul.combine.lr(320,300)(whatever,vixf,voxf);
984   tsu_render;
985 endtsuglyph;
986

```

U+1199
mande.uni1199



```
987 % hangul vowel i-ya
988 begint Suglyph("uni1199",153);
989   hangul.combine.lr(320,302)(whatever,vixf,vox);
990   tsu_render;
991 endtsuglyph;
992
```

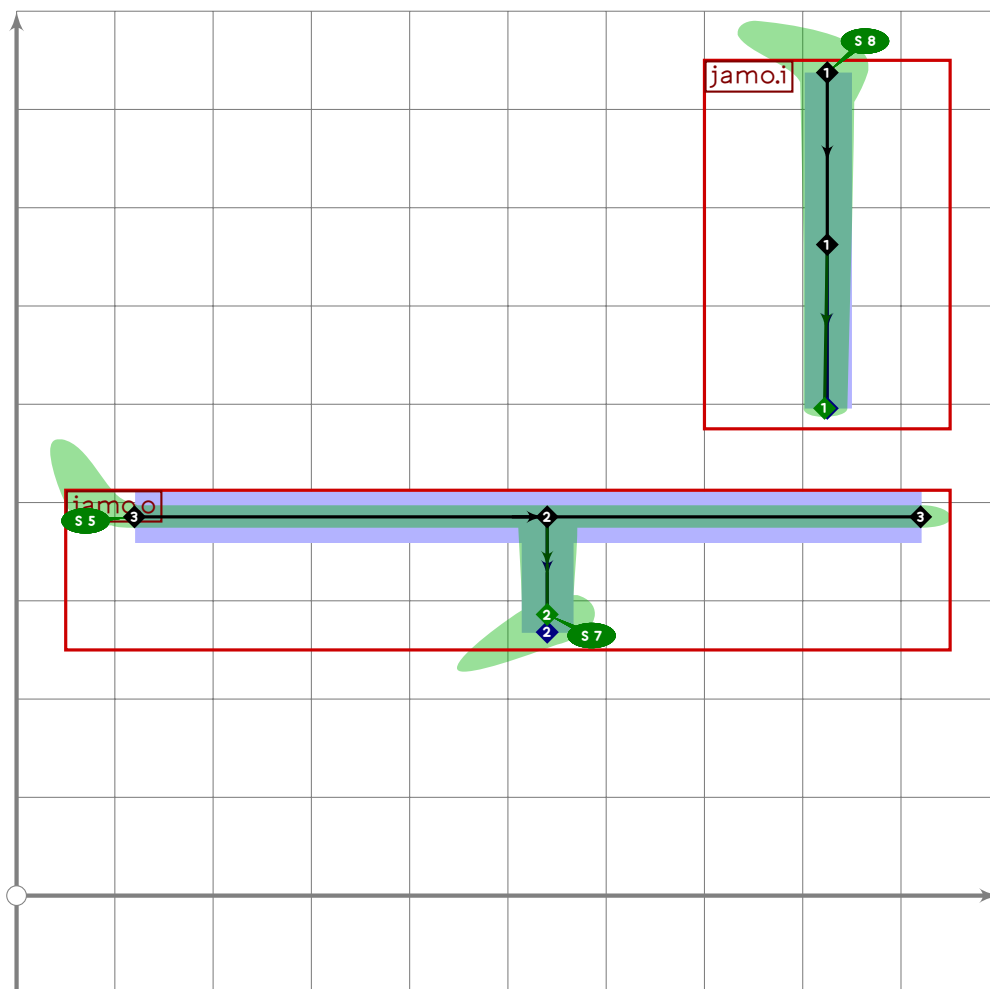


```

993 % hangul vowel i-o
994 beginsuglyph("uni119A",154);
995   hangul.combine.tb(320,308)(whatever,vixf,vox);
996   tsu_render;
997   endtsuglyph;
998

```

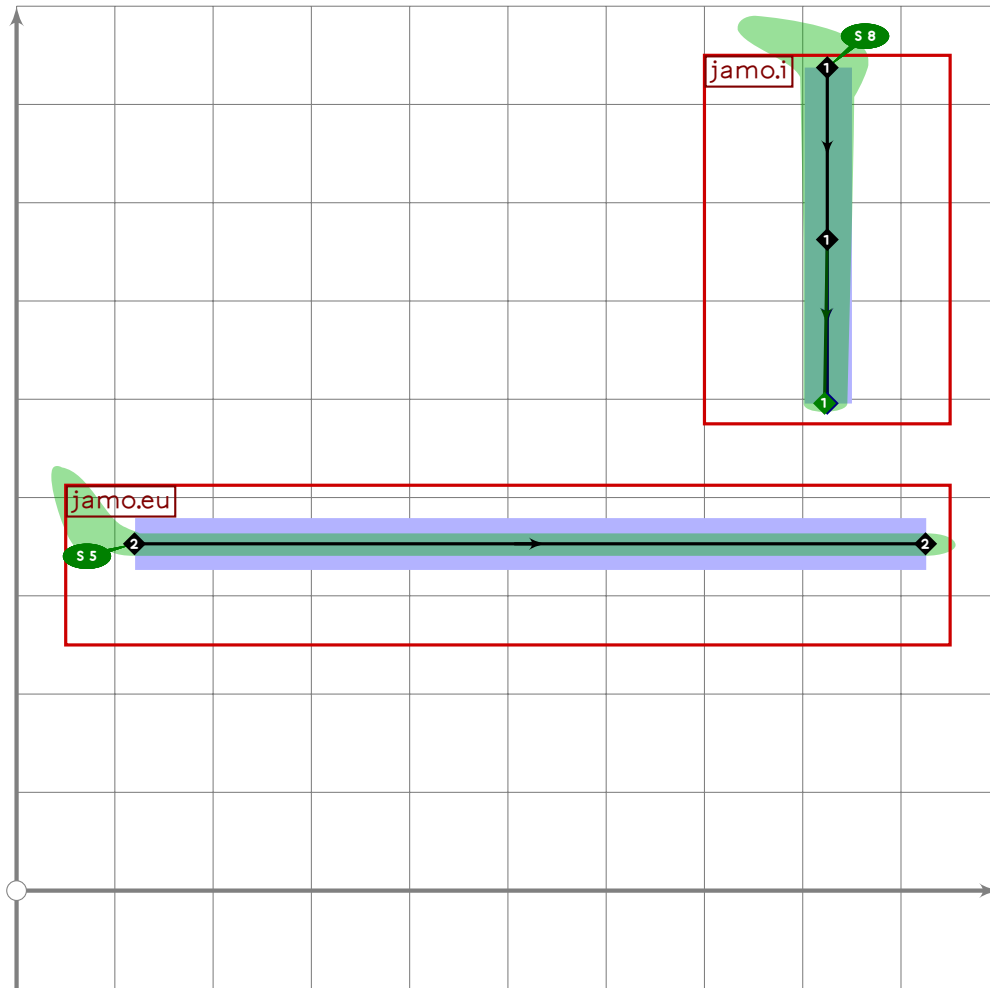
U+119B
mande.uni119B



```

999 % hangul vowel i-u
1000 beginsuglyph("uni119B",155);
1001   hangul.combine.tb(320,313)(whatever,vixf,voxf);
1002   tsu_render;
1003 endsuglyph;
1004

```

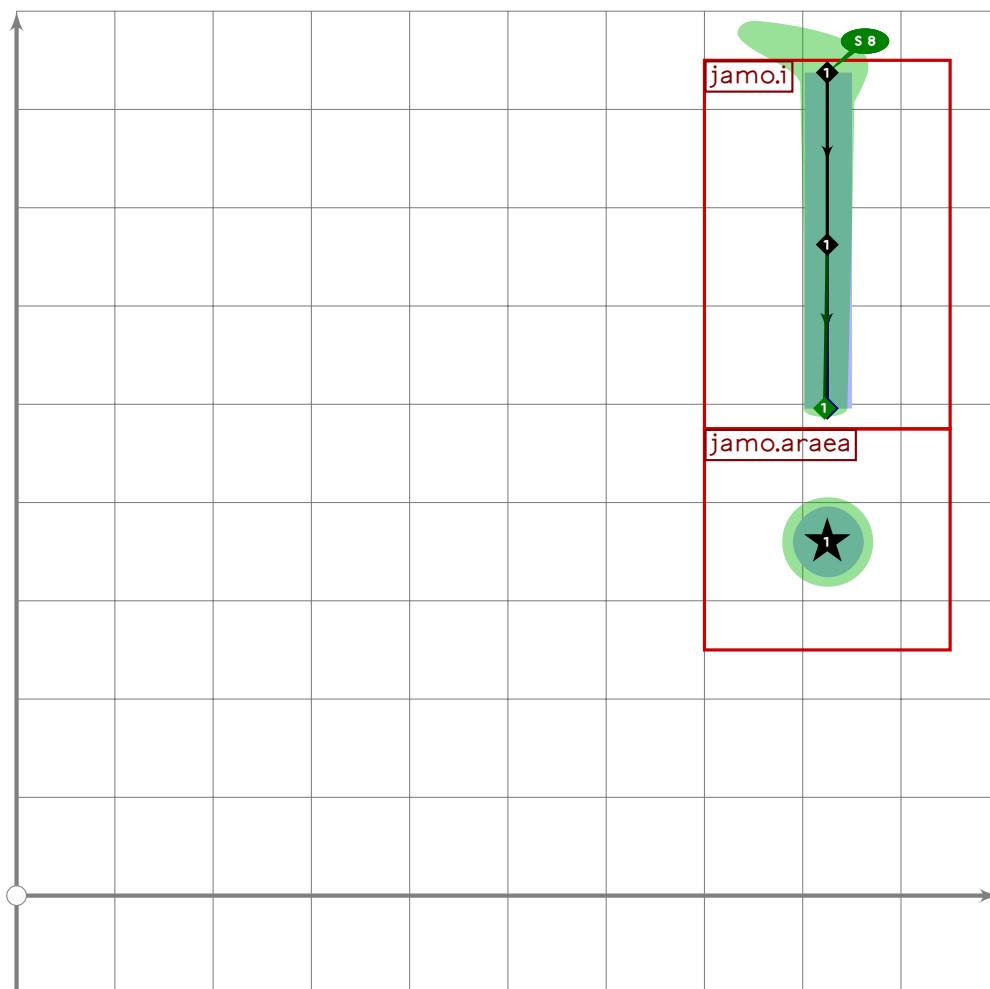


```

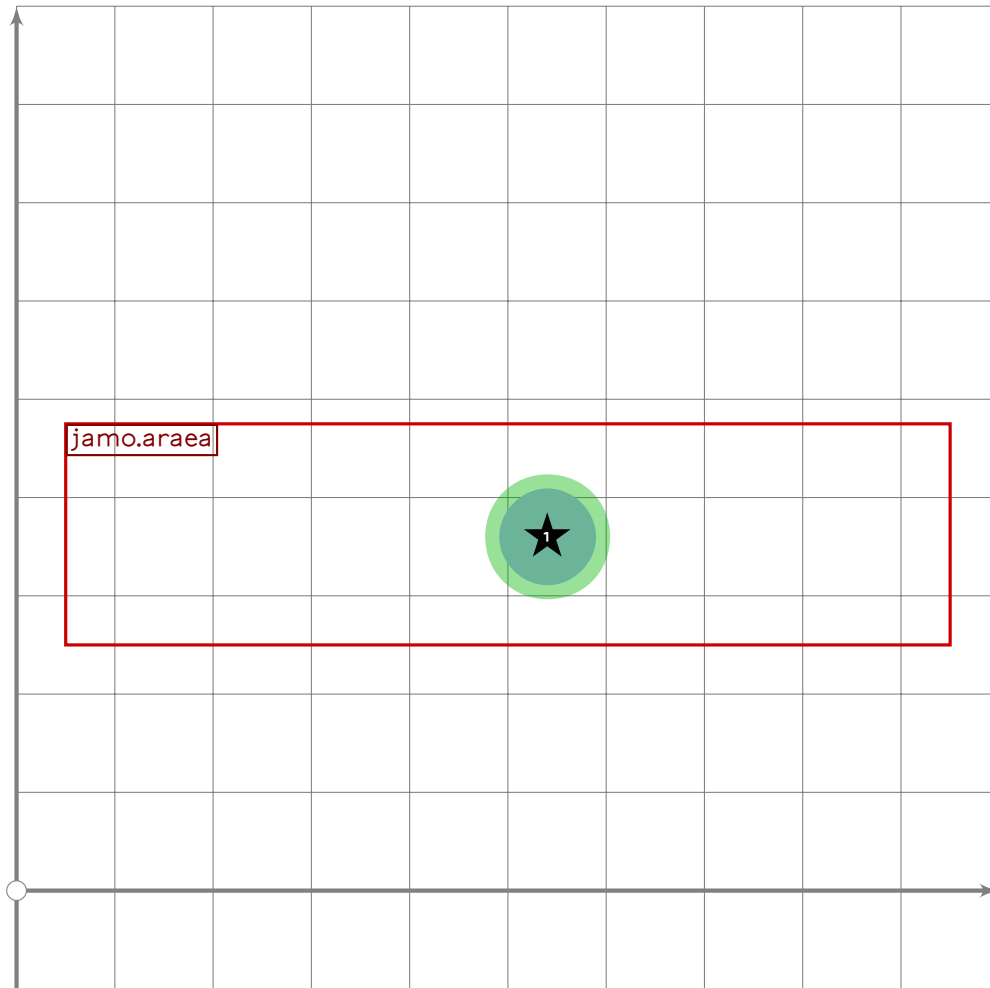
1005 % hangul vowel i-eu
1006 beginsuglyph("uni119C";156);
1007   hangul.combine.tb(320,318)(whatever,vixf,vox);
1008   tsu_render;
1009 endsuglyph;
1010

```

U+119D
mande.uni119D

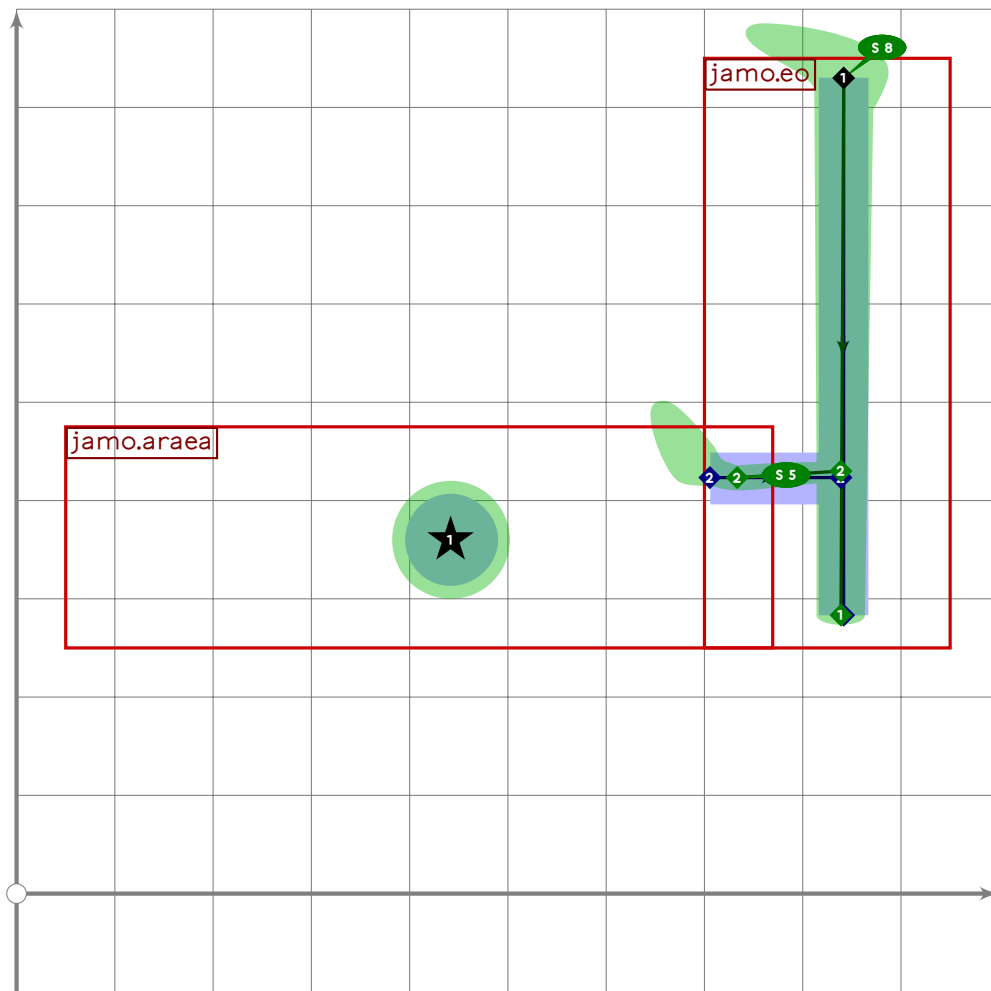


```
1011 % hangul vowel i-araea
1012 beginsuglyph("uni119D",157);
1013 hangul.combine.tb(320,428)(441,vixf,vox);
1014 tsu_render;
1015 endtsuglyph;
1016
```

```
1017 % hangul vowel araea
1018 begintsuglyph("uni119E";158);
1019   hangul.jamo.araea(428,vixf,vox);
1020   tsu_render;
1021 endtsuglyph;
1022
```

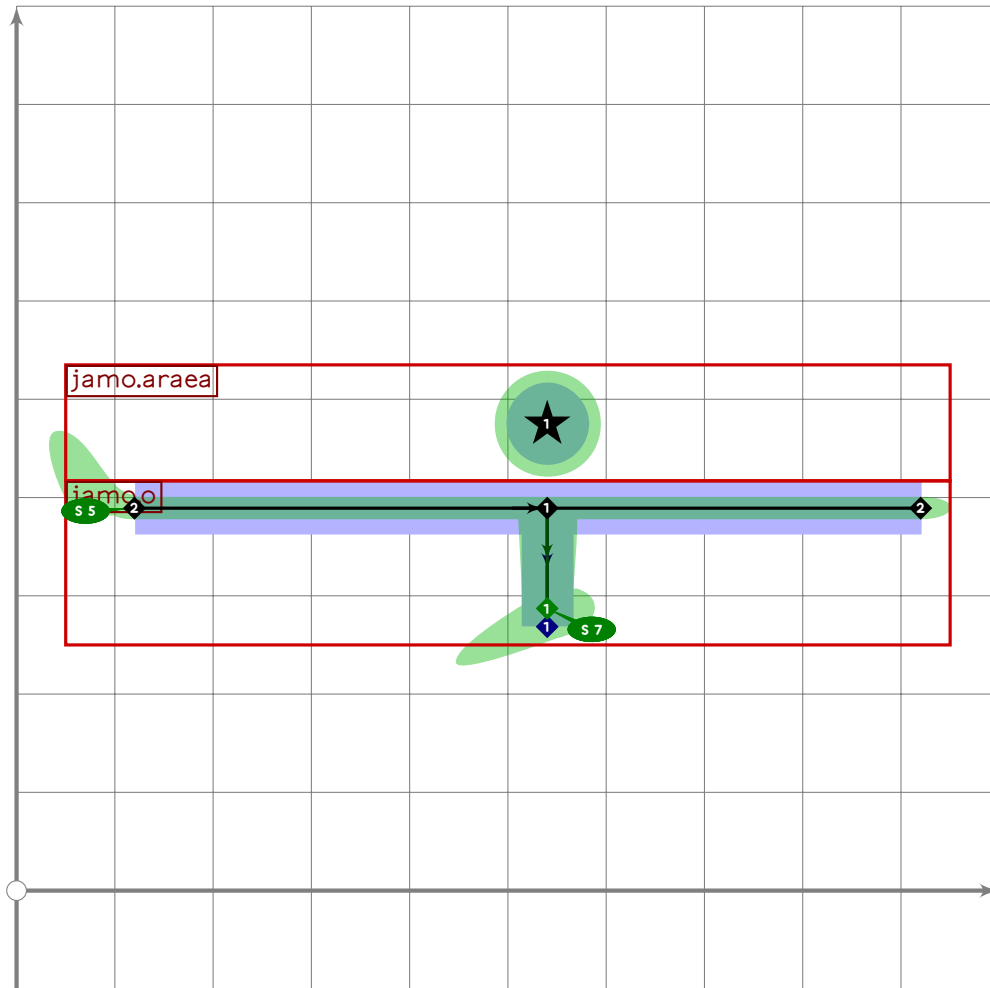
U+119F
mande.uni119F



```

1023 % hangul vowel araea-eo
1024 beginsuglyph("uni119F",159);
1025   hangul.combine.lr(428,304)(whatever,vixf,vox);
1026   tsu__render;
1027 endsuglyph;
1028

```

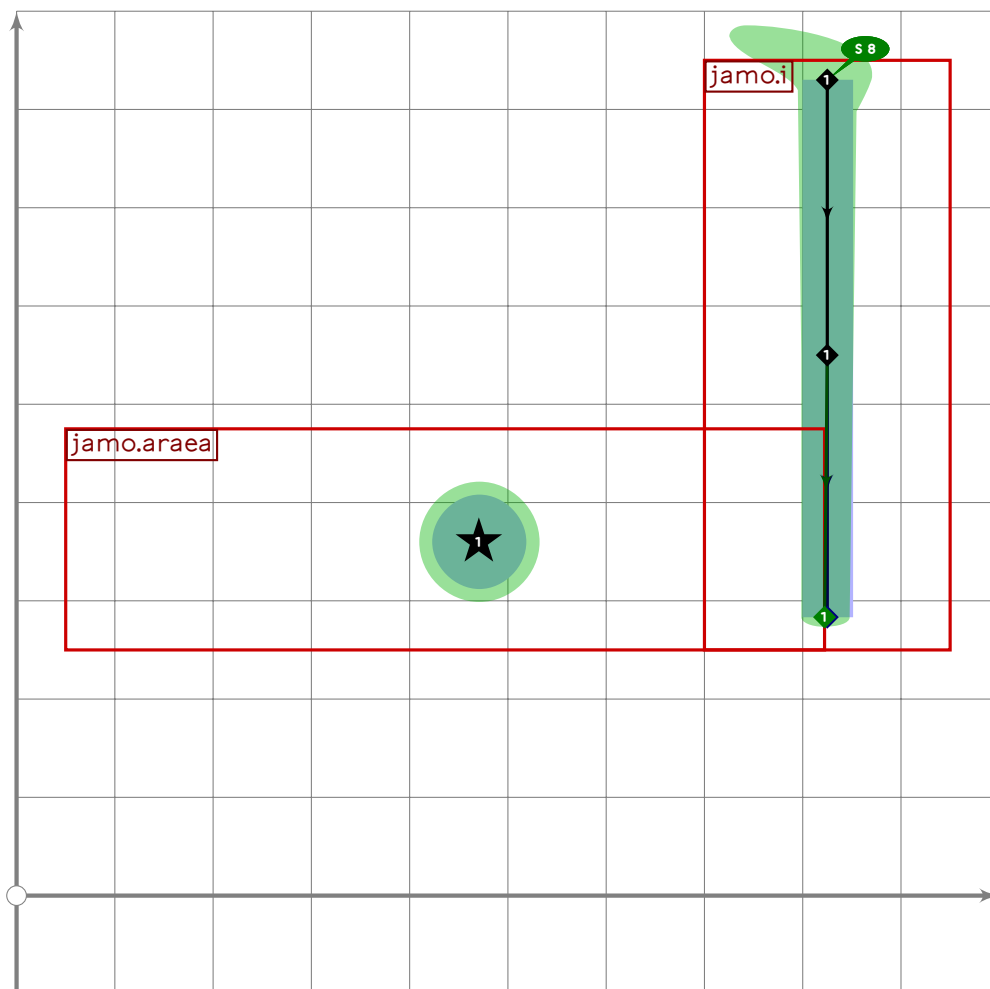


```

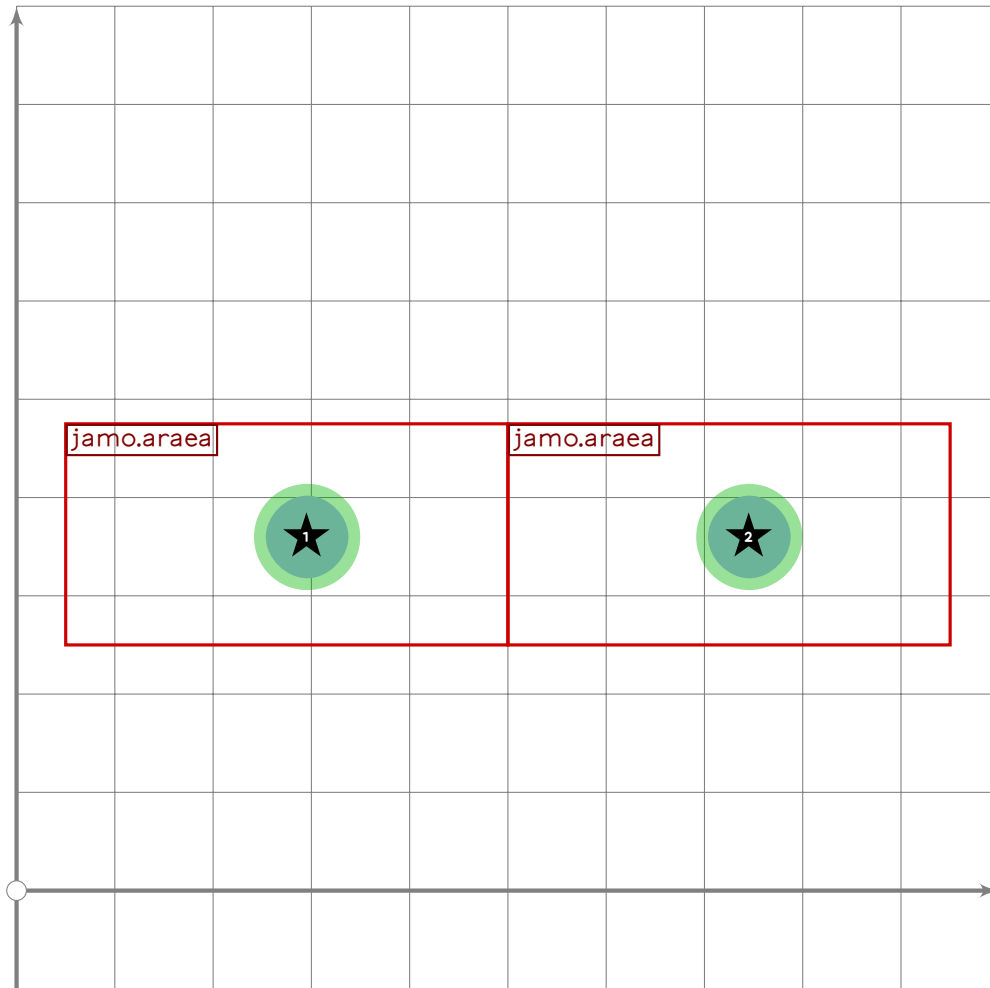
1029 % hangul vowel araea-u
1030 beginsuglyph("uni11A0",160);
1031   hangul.combine.tb(428,313)(whatever,tvixf,vox);
1032   tsu_render;
1033 endsuglyph;
1034

```

U+11A1
mande.uni11A1



```
1035 % hangul vowel araea-i
1036 begintsuglyph("uni11A1",161);
1037   hangul.combine.lr(428,320)(427,vixf,voxf);
1038   tsu_render;
1039 endtsuglyph;
1040
```

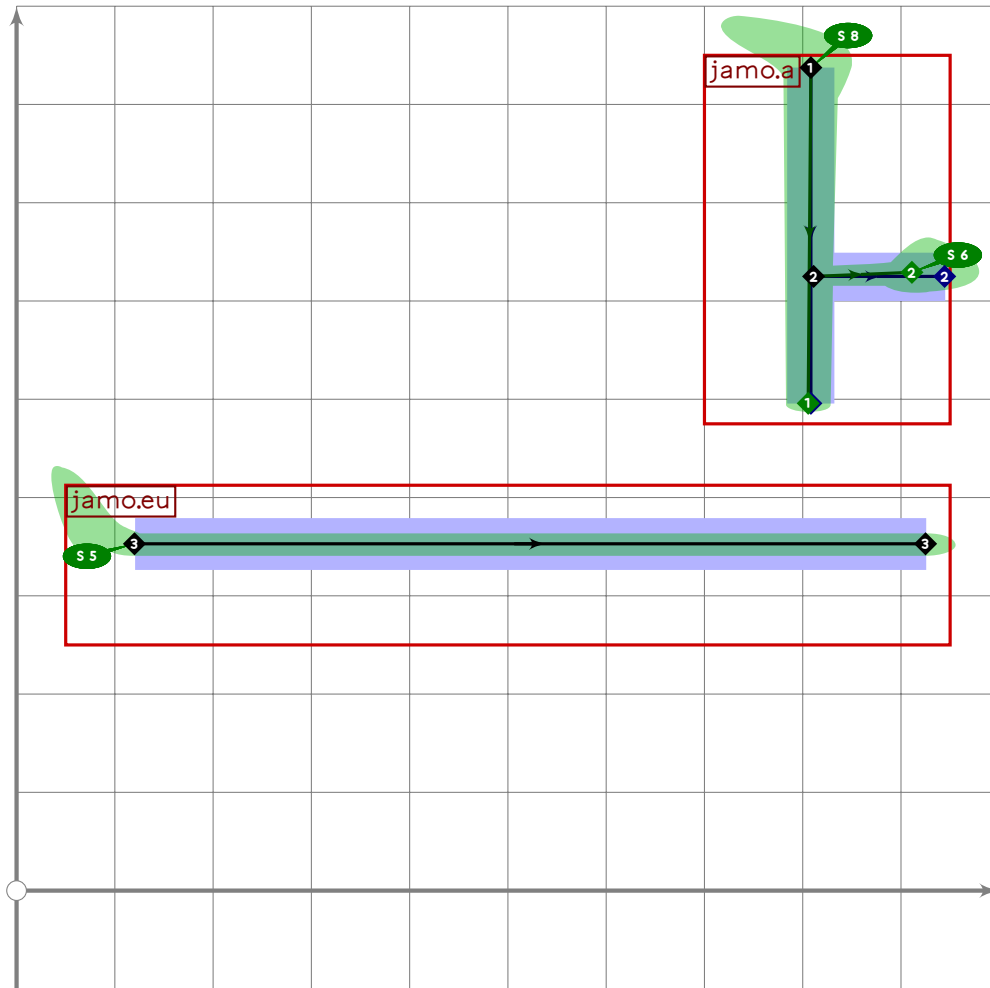


```

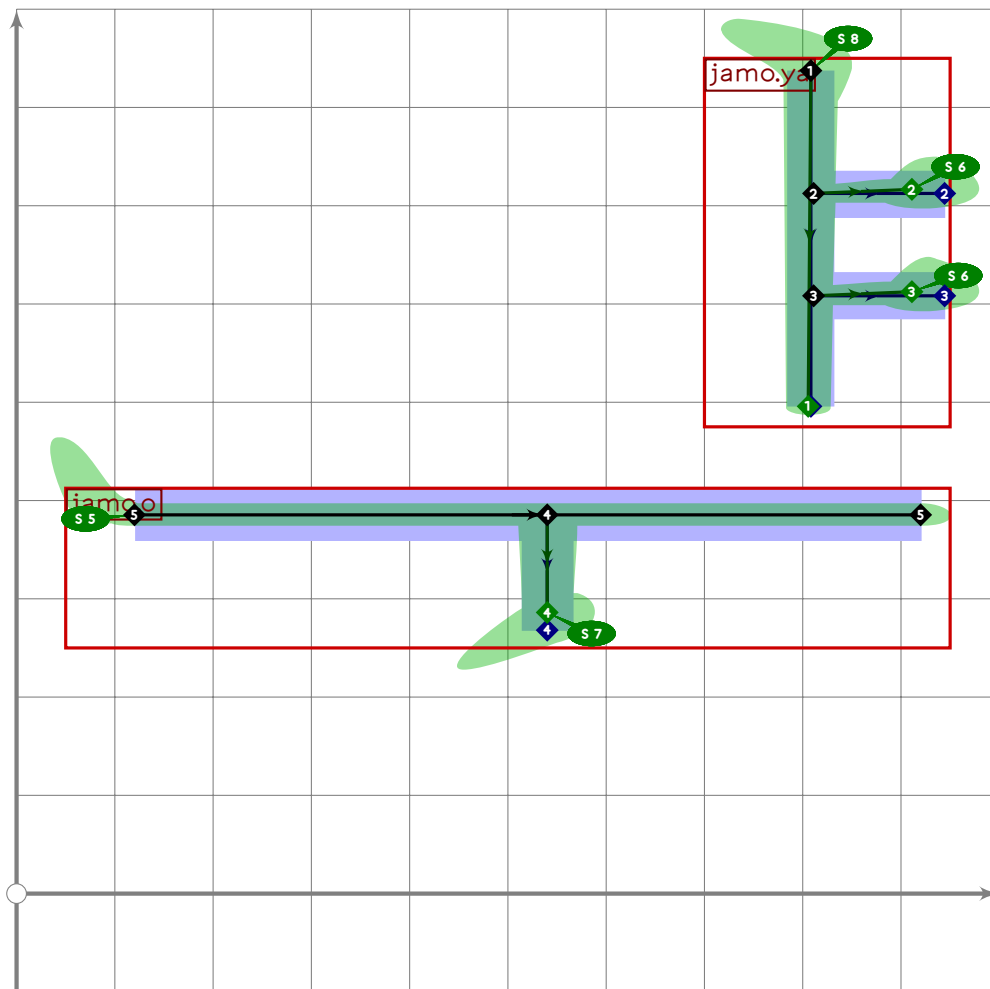
1041 % hangul vowel ssangaraea
1042 begintsuglyph("uni11A2",162);
1043   hangul.combine.lr(428,428)(whatever,
1044     hxf_inout(5,vixf,vox),vox);
1045   tsu_render;
1046 endtsuglyph;
1047

```

U+11A3
mande.uni11A3



```
1048 % hangul vowel a-eu
1049 begint Suglyph("uni11A3",163);
1050   hangul.combine.tb(300,318)(whatever,vixf,voxf);
1051   tsu_render;
1052 endtsuglyph;
1053
```

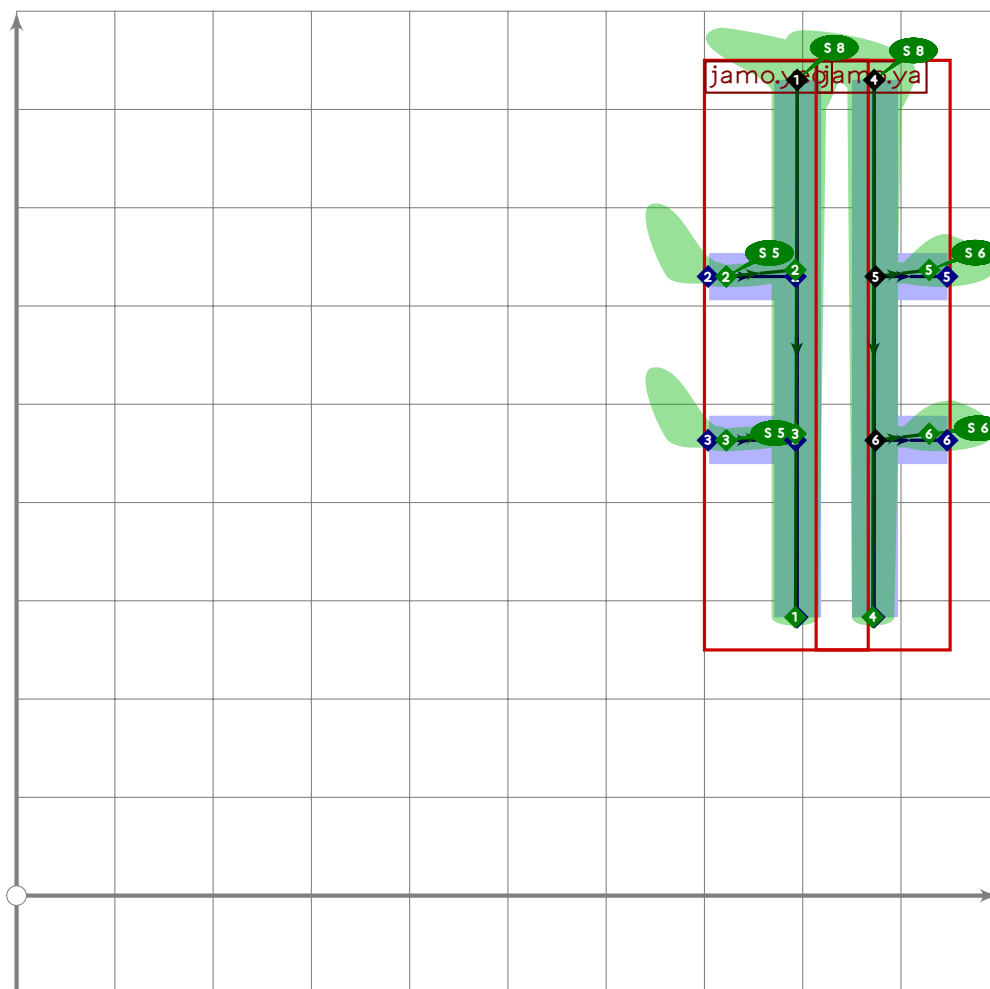


```

1054 % hangul vowel ya-u
1055 begintsuglyph("uni11A4",164);
1056 hangul.combine.tb(302,313)(whatever,vixf,vox);
1057 tsu_render;
1058 endtsuglyph;
1059

```

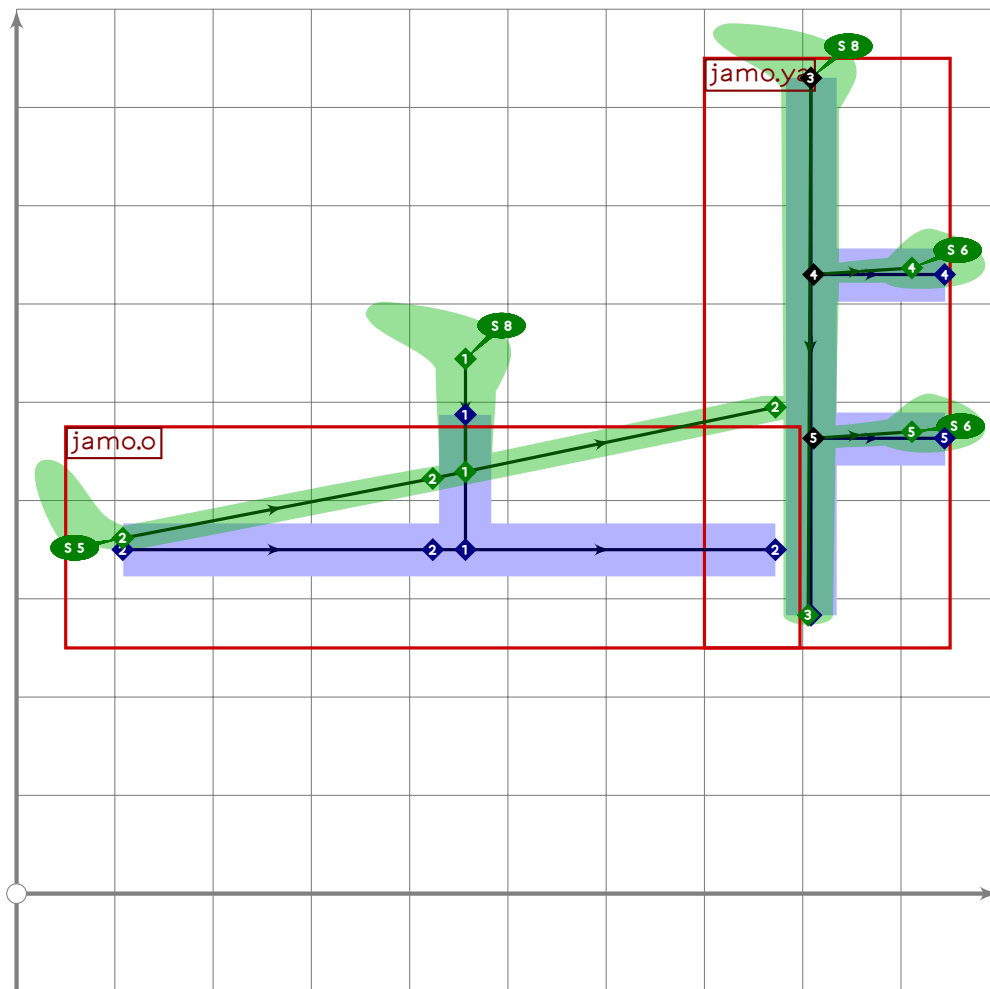
U+11A5
mande.uni11A5



```

1060 % hangul vowel yeo-ya
1061 begintsuglyph("uni11A5";165);
1062   hangul.combine.lr(306,302)(whatever,vixf,voxf);
1063   tsu_render;
1064 endtsuglyph;
1065

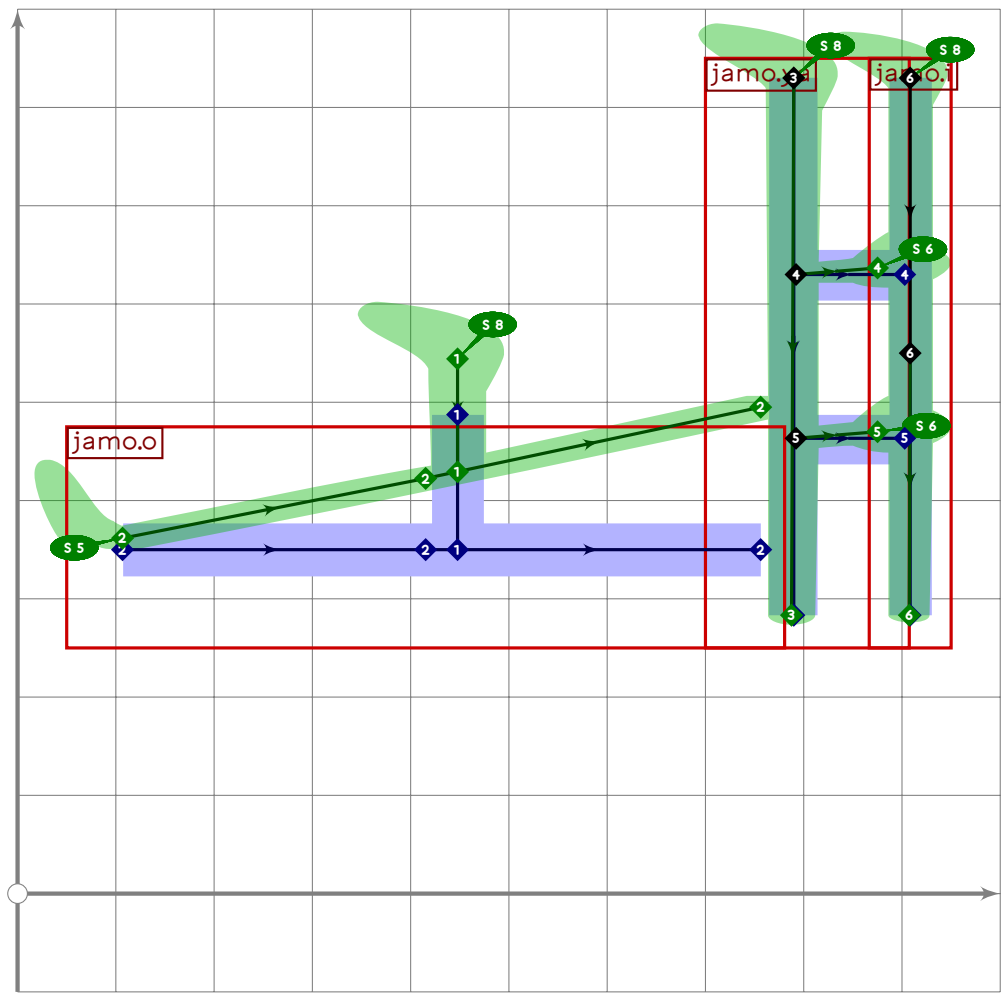
```

```

1066 % hangul vowel o-ya
1067 begintsuglyph("uni11A6",166);
1068 hangul.combine.lr(308,302)(442,vixf,vox);
1069 tsu_render;
1070 endtsuglyph;
1071

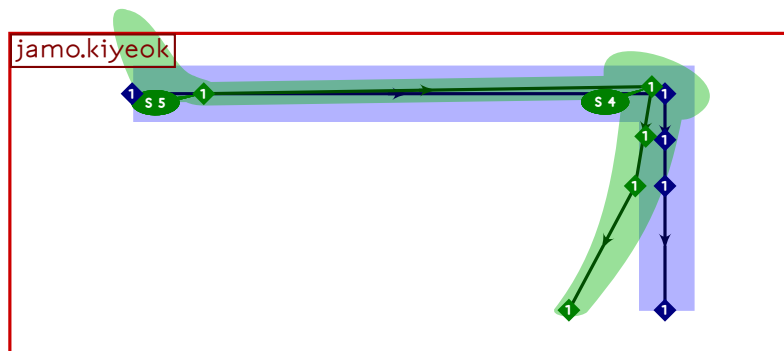
```



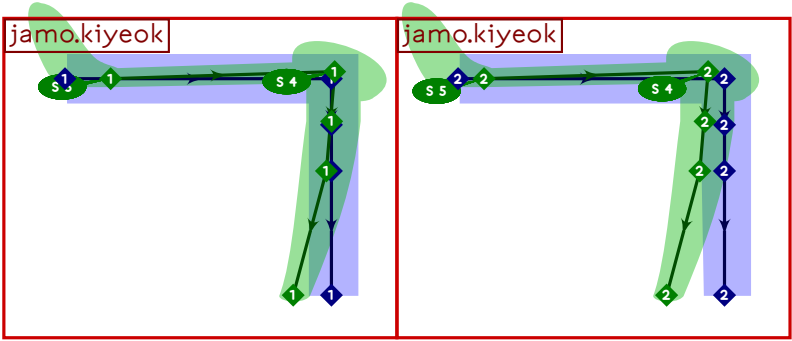
```
1072 % hangul vowel o-yae
1073 begintsuglyph("uni11A7";167);
1074   hangul.combine.lr(308,303)(443,vixf,voxf);
1075   tsu_render;
1076 endtsuglyph;
1077
1078
1079
```

Hangul Jongseong (Tail) Jamo

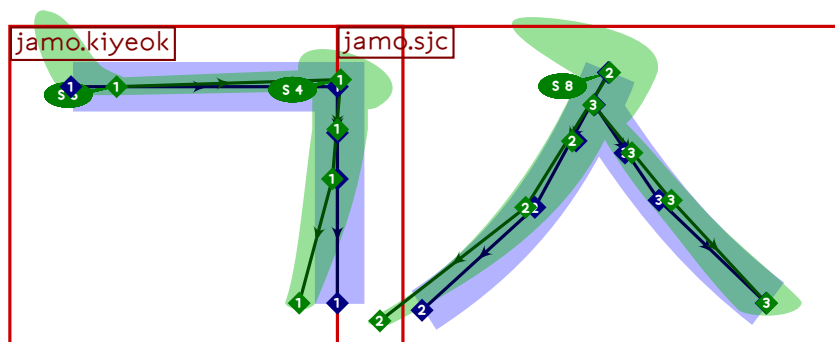
```
1080 % HANGUL JONGSEONG (TAIL) JAMO
1081
1082 tsu_rescale_native_zero;
1083
```



```
1084 % hangul tail kiyeok
1085 begintsuglyph("uni11A8",168);
1086   hangul.jamo.kiyeok(whatever,tixf,toxf);
1087   tsu_render;
1088 endtsuglyph;
1089
```



```
1090 % hangul tail ssangkiyeok
1091 begintsuglyph("uni11A9",169);
1092   hangul.combine.lr(501,501)(whatever,tixf,toxf);
1093   tsu_render;
1094 endsuglyph;
1095
```

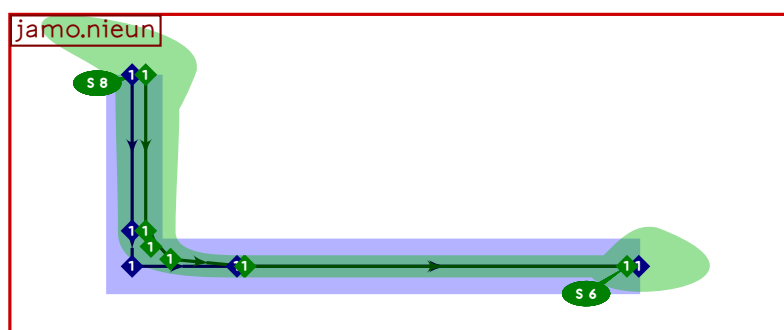


```

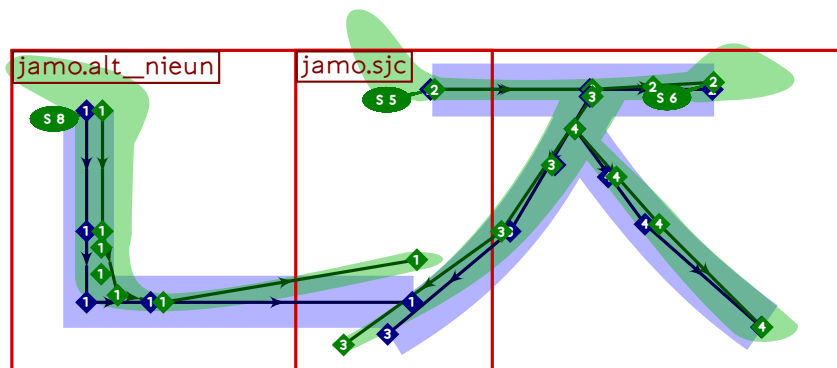
1096 % hangul tail kiyeok-sios
1097 begintsuglyph("uni11AA";170);
1098   hangul.combine.lr(501,519)(whatever;tixf,toxf);
1099   tsu_render;
1100 endtsuglyph;
1101

```

U+11AB
mande.uni11AB



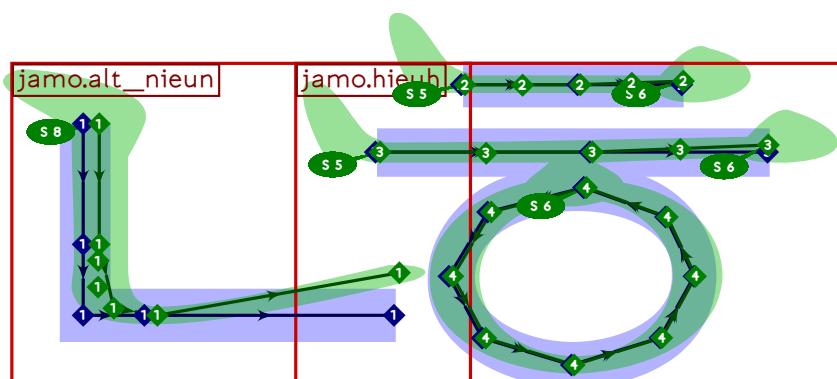
```
1102 % hangul tail nieun
1103 beginsuglyph("uni11AB";171);
1104   hangul.jamo.nieun(whatever,tixf,toxf);
1105   tsu_render;
1106 endsuglyph;
1107
```



```

1108 % hangul tail nieun-cieuc
1109 begint Suglyph("uni11AC",172);
1110 hangul.combine.lr(604,522)(whatever,tixf,toxf);
1111 tsu_render;
1112 endtsuglyph;
1113

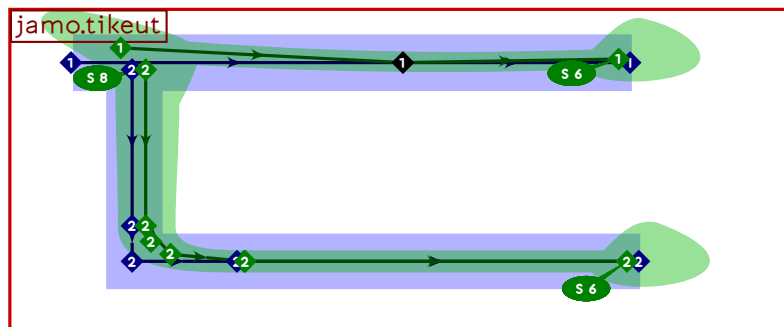
```



```

1114 % hangul tail nieun-hieuh
1115 begintsuglyph("uni11AD",173);
1116 hangul.combine.lr(604,527)(whatever,tixf,toxf);
1117 tsu_render;
1118 endsuglyph;
1119

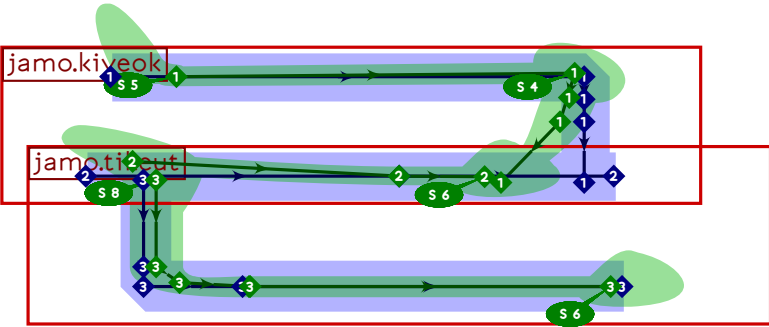
```

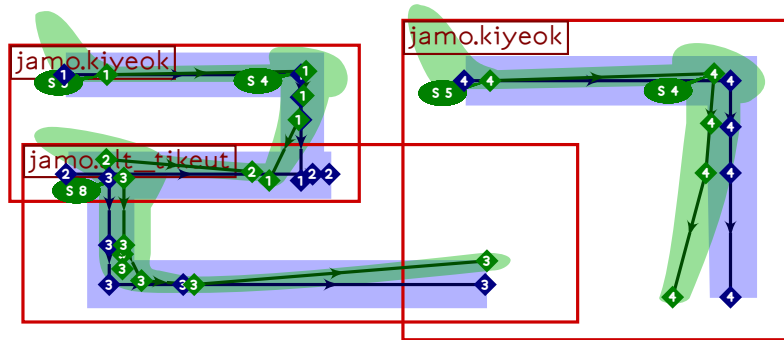
```

1120 % hangul tail tikeut
1121 beginsuglyph("uni11AE";174);
1122   hangul.jamo.tikeut(whatever;tixf,toxf);
1123   tsu_render;
1124 endsuglyph;
1125

```



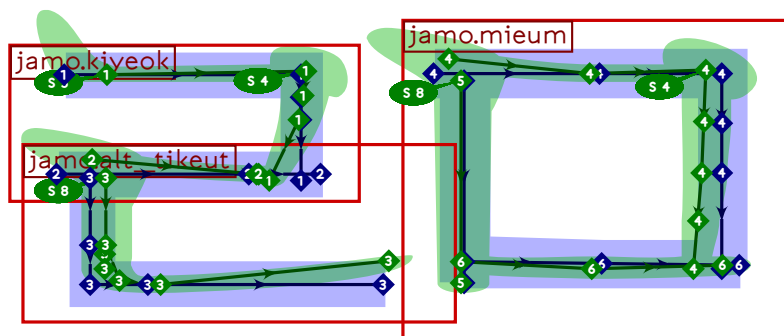
```
1126 % hangul tail rieul
1127 begintsuglyph("uni11AF",175);
1128   hangul.jamo.rieul(whatever,tixf,toxf);
1129   tsu_render;
1130 endsuglyph;
1131
```



```

1132 % hangul tail rieul-kiyeok
1133 begintsuglyph("uni11B0",176);
1134 hangul.combine.lr(608,501)(whatever,tixf,toxf);
1135 tsu_render;
1136 endtsuglyph;
1137

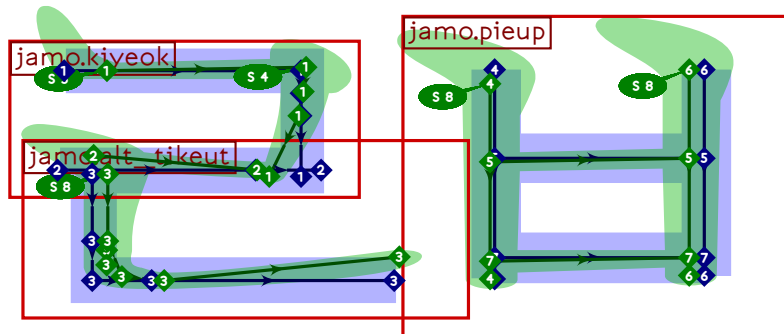
```



```

1138 % hangul tail rieul-mieum
1139 begintsuglyph("uni11B1",177);
1140 hangul.combine.lr(608,516)(whatever,tixf,toxf);
1141 tsu_render;
1142 endtsuglyph;
1143

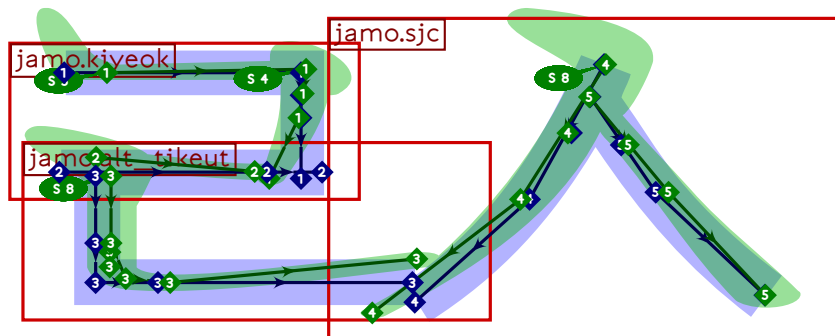
```



```

1144 % hangul tail rieul-pieup
1145 begintsuglyph("uni11B2";178);
1146   hangul.combine.lr(608,517)(whatever,tixf,toxf);
1147   tsu_render;
1148 endtsuglyph;
1149

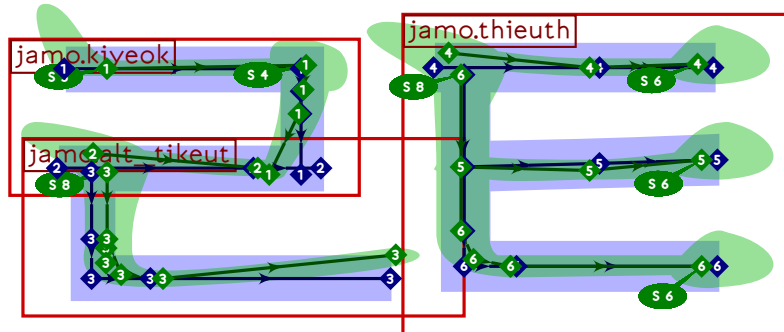
```



```

1150 % hangul tail rieuul-sios
1151 begint Suglyph("uni11B3",179);
1152   hangul.combine.lr(608,519)(whatever,tixf,toxf);
1153   tsu_render;
1154 endtsuglyph;
1155

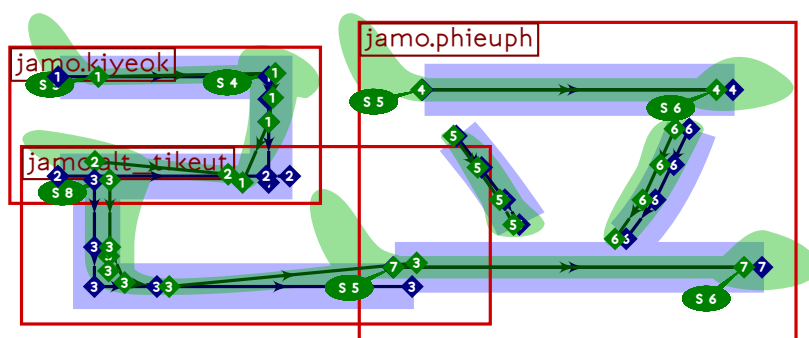
```



```

1156 % hangul tail rieul-thieuth
1157 begintsuglyph("uni11B4",180);
1158   hangul.combine.lr(608,525)(whatever,tixf,toxf);
1159   tsu_render;
1160 endtsuglyph;
1161

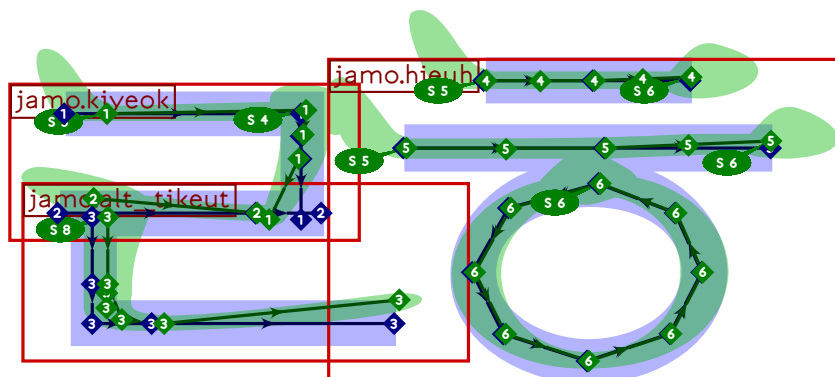
```



```

1162 % hangul tail rieul-phieuph
1163 begintsuglyph("uni11B5",181);
1164 hangul.combine.lr(608,526)(whatever,tixf,toxf);
1165 tsu_render;
1166 endsuglyph;
1167

```

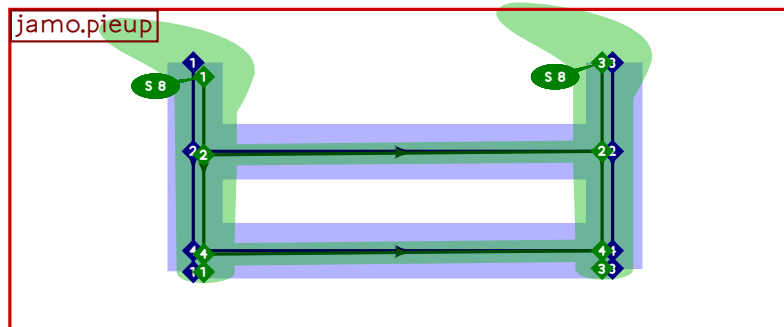
```

1168 % hangul tail rieul-hieuh
1169 begintsuglyph("uni11B6",182);
1170 hangul.combine.lr(608,527)(whatever,tixf,toxf);
1171 tsu_render;
1172 endtsuglyph;
1173

```



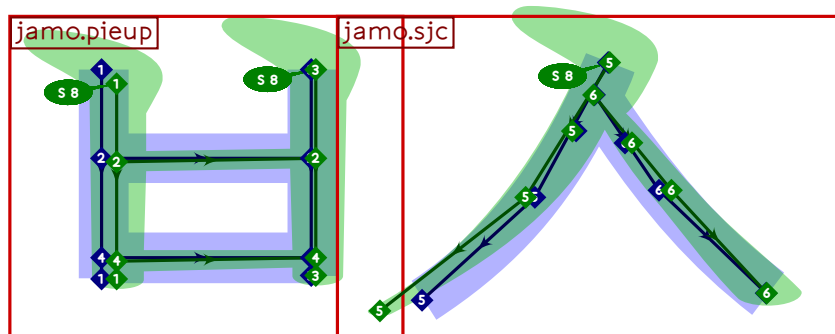
○



```

1180 % hangul tail pieup
1181 beginsuglyph("uni11B8",184);
1182   hangul.jamo.pieup(whatever,tixf,toxf);
1183   tsu_render;
1184 endsuglyph;
1185

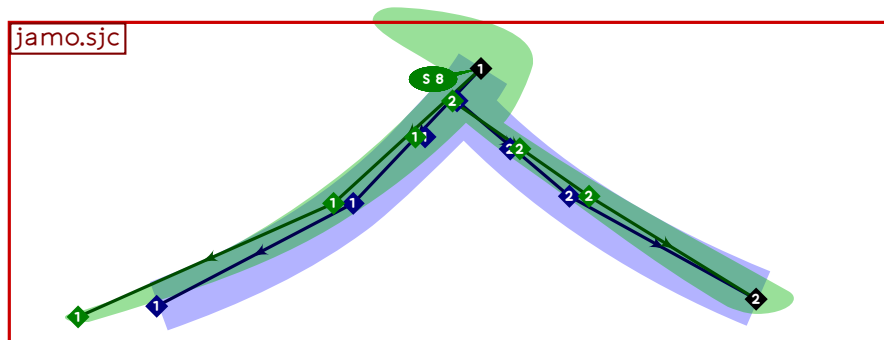
```



```

1186 % hangul tail pieup-sios
1187 begintsuglyph("uni11B9",185);
1188   hangul.combine.lr(517,519)(whatever,tixf,toxf);
1189   tsu_render;
1190 endtsuglyph;
1191

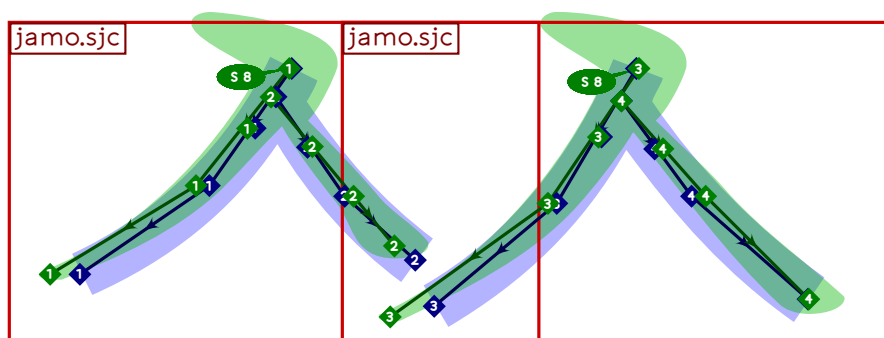
```



```

1192 % hangul tail sios
1193 begintsuglyph("uni11BA",186);
1194   hangul.jamo.sjc(0,0,false)(whatever,tixf,toxf);
1195   tsu_render;
1196 endtsuglyph;
1197

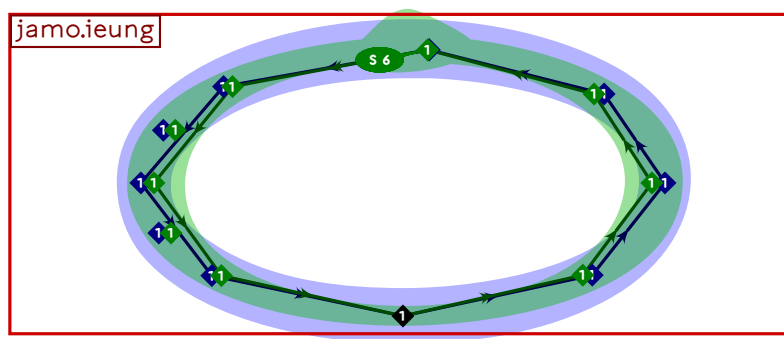
```



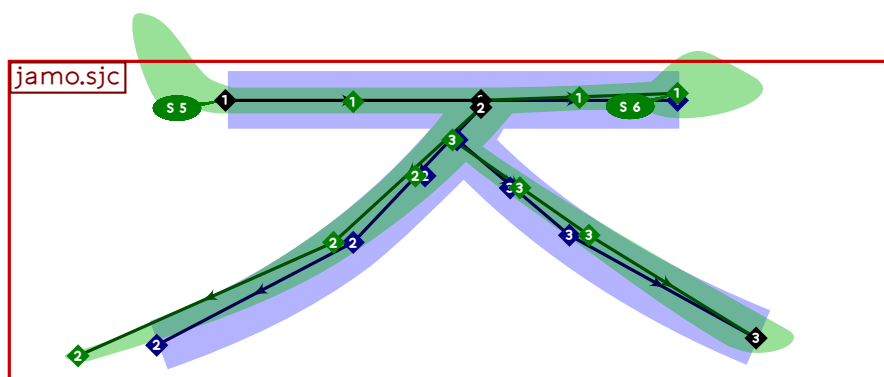
```

1198 % hangul tail ssangsios
1199 begintsuglyph("uni11BB",187);
1200 hangul.combine.lr(619,519)(whatever,tixf,toxf);
1201 tsu_render;
1202 endtsuglyph;
1203

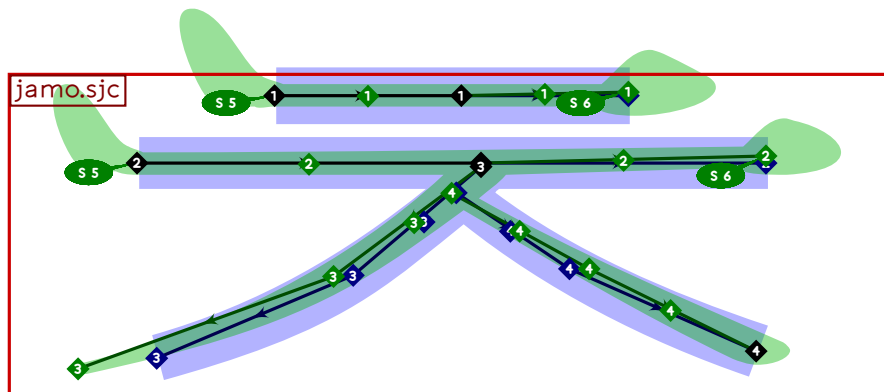
```



```
1204 % hangul tail ieung
1205 beginsuglyph("uni11BC",188);
1206   hangul.jamo.ieung(whatever,tixf,toxf);
1207   tsu_render;
1208 endsuglyph;
1209
```



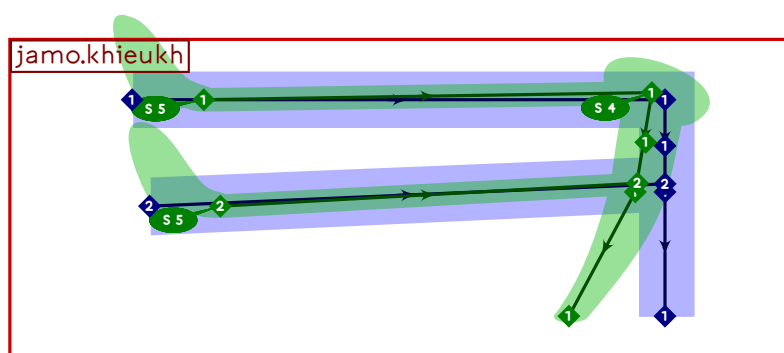
```
1210 % hangul tail cieuc
1211 begintsuglyph("uni11BD",189);
1212   hangul.jamo.sjc(1,0,false)(whatever,tixf,toxf);
1213   tsu_render;
1214 endtsuglyph;
1215
```

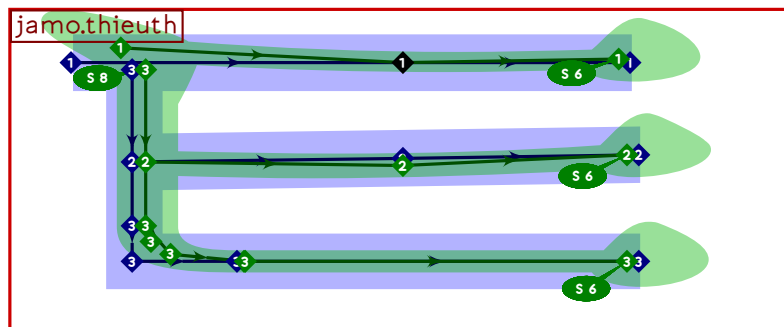
```

1216 % hangul tail chieuch
1217 begintsuglyph("uni11BE";190);
1218   hangul.jamo.sjc(2,0,false)(whatever,tixf,toxf);
1219   tsu_render;
1220 endsuglyph;
1221

```



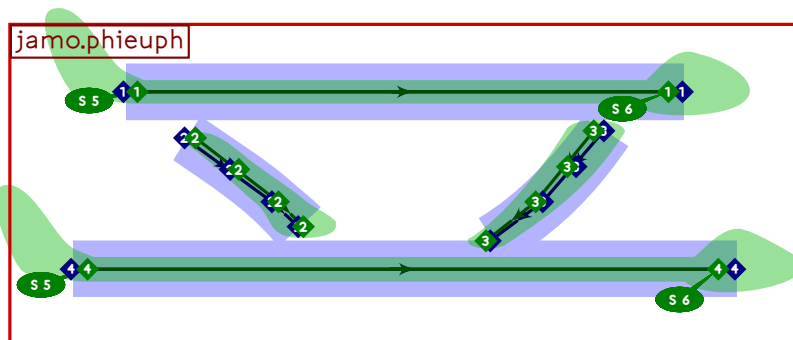
```
1222 % hangul tail khieukh
1223 beginsuglyph("uni11BF";191);
1224   hangul.jamo.khieukh(whatever,tixf,toxf);
1225   tsu_render;
1226 endsuglyph;
1227
```



```

1228 % hangul tail thieuth
1229 begintsuglyph("uni11C0";192);
1230   hangul.jamo.thieuth(whatever;tixf,toxf);
1231   tsu_render;
1232 endtsuglyph;
1233

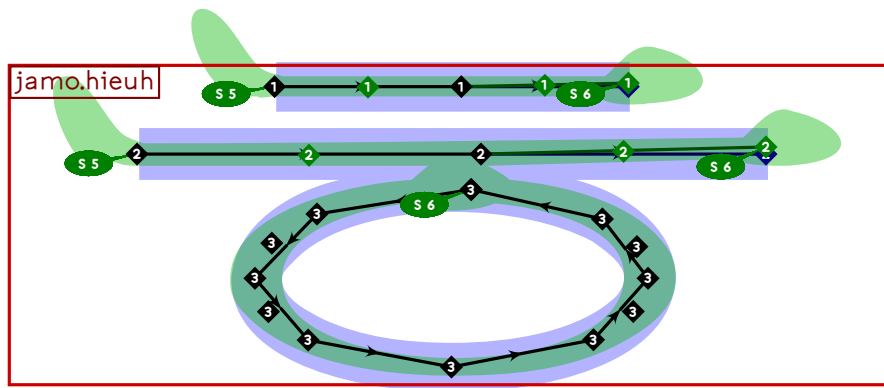
```



```

1234 % hangul tail phieuph
1235 beginsuglyph("uni11C1",193);
1236   hangul.jamo.phieuph(whatever,tixf,toxf);
1237   tsu_render;
1238 endsuglyph;
1239

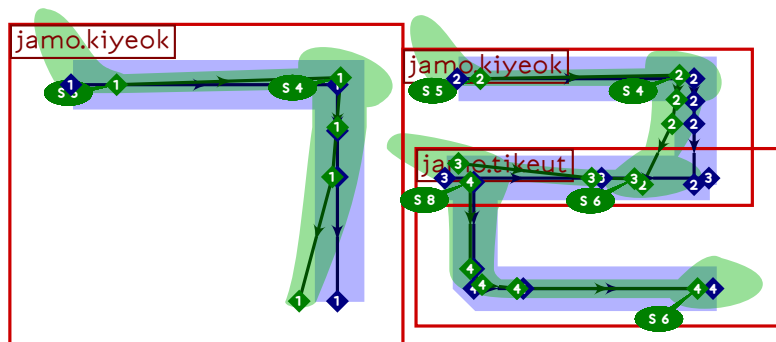
```



```

1240 % hangul tail hieuh
1241 begintsuglyph("uni11C2",194);
1242   hangul.jamo.hieuh(whatever,tixf,toxf);
1243   tsu_render;
1244 endtsuglyph;
1245

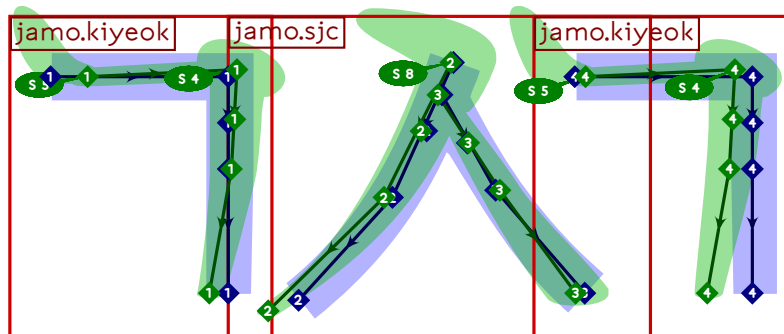
```



```

1246 % hangul tail kiyeok-rieul
1247 begintsuglyph("uni11C3";195);
1248   hangul.combine.lr(501,508)(whatever,tixf,toxf);
1249   tsu_render;
1250 endtsuglyph;
1251

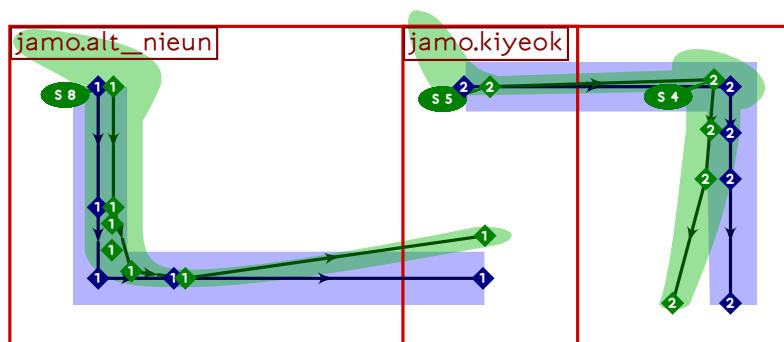
```



```

1252 % hangul tail kiyeok-sios-kiyeok
1253 begintsuglyph("uni11C4",196);
1254 hangul.combine.lcr(501,519,501)(whatever,tixf,toxf);
1255 tsu_render;
1256 endtsuglyph;
1257

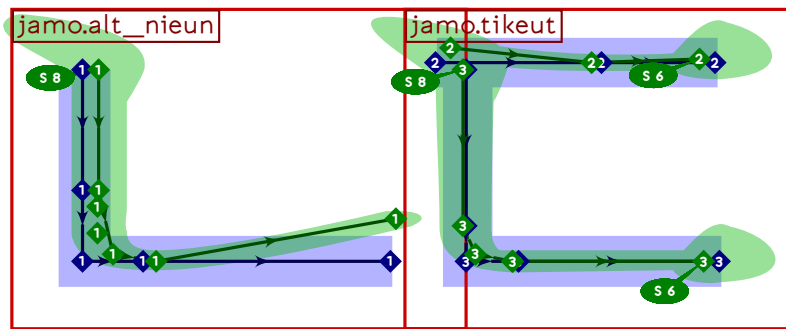
```



```

1258 % hangul tail nieun-kiyeok
1259 begint Suglyph("uni11C5",197);
1260   hangul.combine.lr(604,501)(whatever,tixf,toxf);
1261   tsu_render;
1262 endtsuglyph;
1263

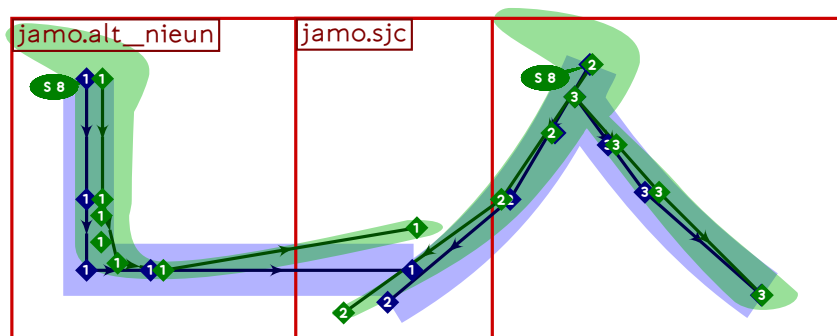
```

```

1264 % hangul tail nieun-tikeut
1265 begintsuglyph("uni11C6";198);
1266   hangul.combine.lr(604,507)(whatever;tixf,toxf);
1267   tsu_render;
1268 endtsuglyph;
1269

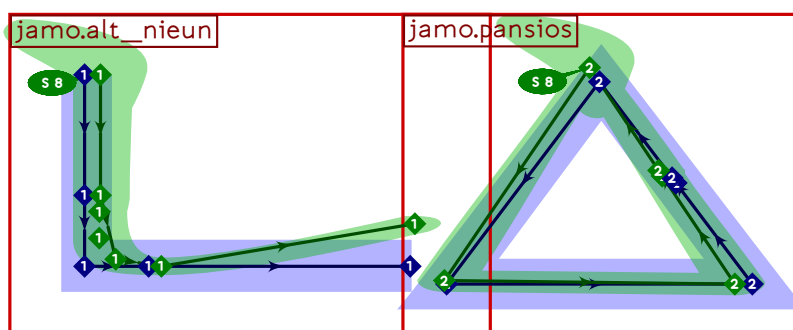
```



```

1270 % hangul tail nieun-sios
1271 begintsuglyph("uni11C7",199);
1272   hangul.combine.lr(604,519)(whatever,tixf,toxf);
1273   tsu_render;
1274 endsuglyph;
1275

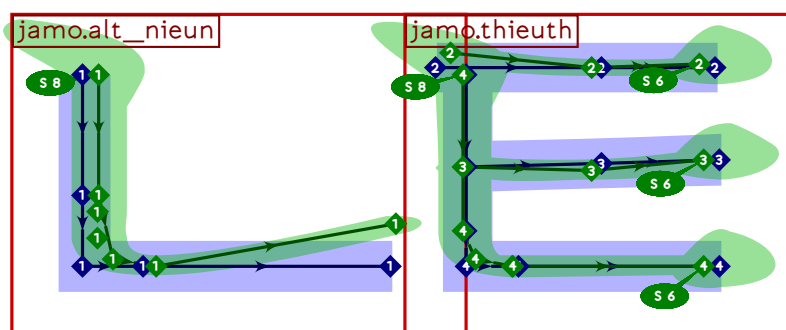
```



```

1276 % hangul tail nieun-pansios
1277 begint Suglyph("uni11C8";200);
1278   hangul.combine.lr(604,628)(whatever,tixf,toxf);
1279   tsu_render;
1280 endtsuglyph;
1281

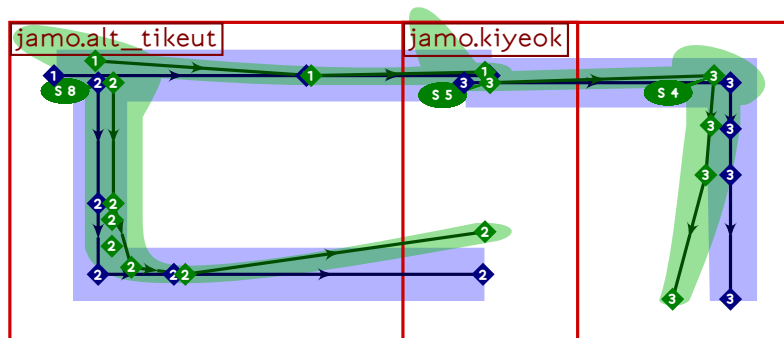
```



```

1282 % hangul tail nieun-thieuth
1283 beginsuglyph("uni11C9";201);
1284   hangul.combine.lr(604,525)(whatever,tixf,toxf);
1285   tsu_render;
1286 endsuglyph;
1287

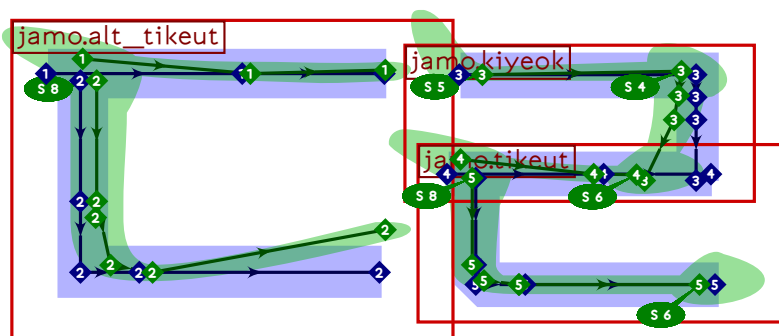
```



```

1288 % hangul tail tikeut-kiyeok
1289 beginsuglyph("uni11CA";202);
1290   hangul.combine.lr(607,501)(whatever,tixf,toxf);
1291   tsu_render;
1292 endsuglyph;
1293

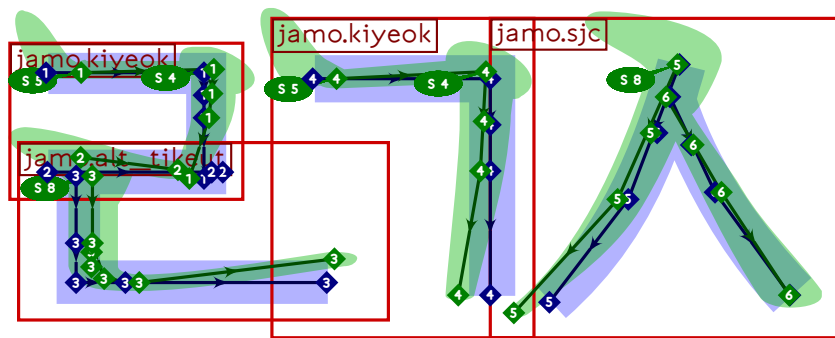
```



```

1294 % hangul tail tikeut-rieul
1295 begintsuglyph("uni11CB";203);
1296   hangul.combine.lr(607,508)(whatever,tixf,toxf);
1297   tsu_render;
1298 endtsuglyph;
1299

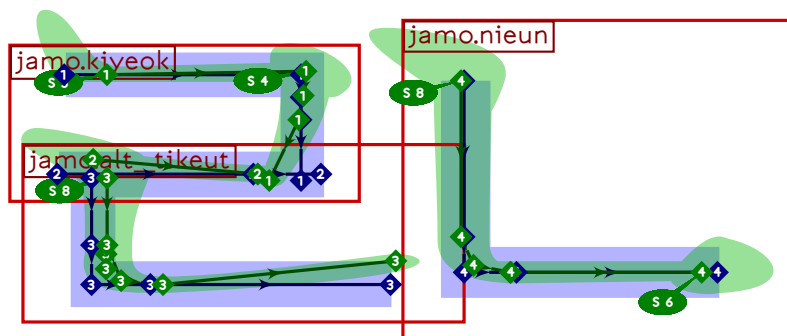
```



```

1300 % hangul tail rieul-kiyeok-sios
1301 begintsuglyph("uni11CC";204);
1302   hangul.combine.lcr(608,501,519)(whatever,tixf,toxf);
1303   tsu_render;
1304 endtsuglyph;
1305

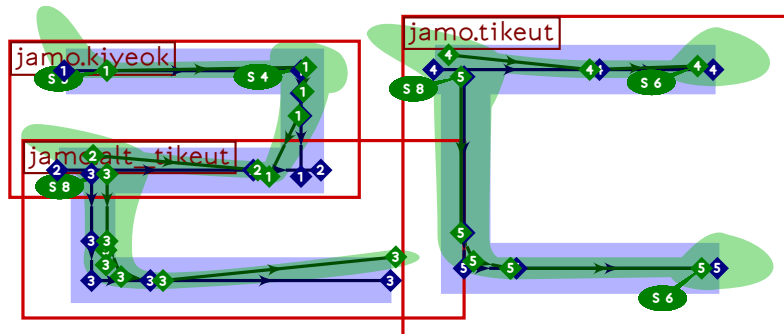
```



```

1306 % hangul tail rieul-nieun
1307 begintsuglyph("uni11CD";205);
1308   hangul.combine.lr(608,504)(whatever,tixf,toxf);
1309   tsu_render;
1310 endtsuglyph;
1311

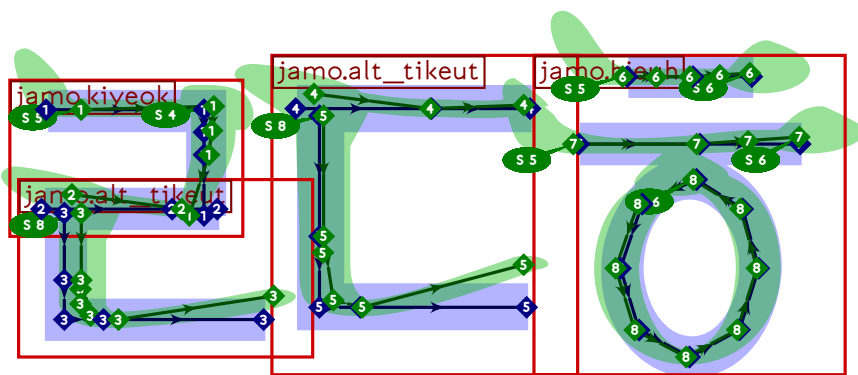
```

```

1312 % hangul tail rieul-tikeut
1313 begintsuglyph("uni11CE";206);
1314   hangul.combine.lr(608,507)(whatever,tixf,toxf);
1315   tsu_render;
1316 endtsuglyph;
1317

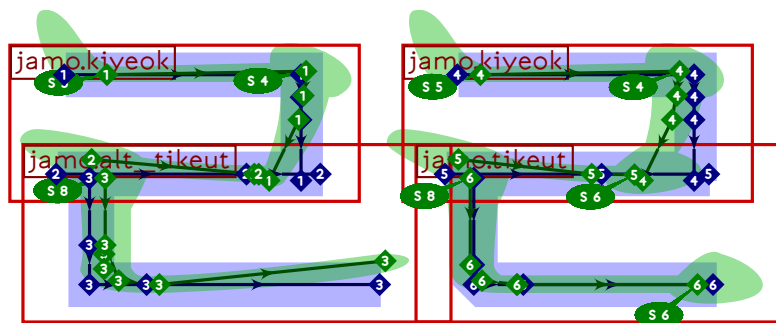
```



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1318 % hangul tail rieul-tikeut-hieuh
1319 begintsuglyph("uni11CF";207);
1320 hangul.combine.lcr(608,607,627)(whatever,tixf,toxf);
1321 tsu_render;
1322 endsuglyph;
1323

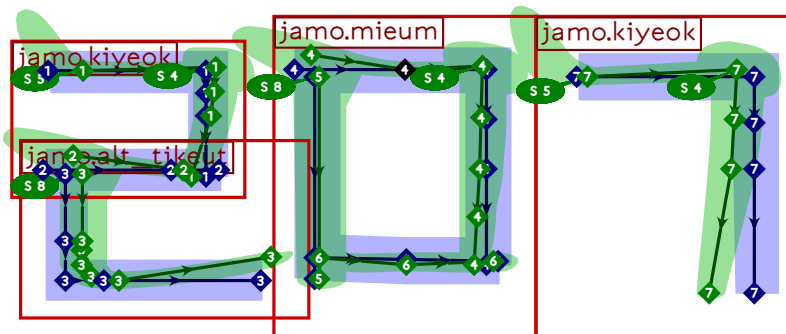
```



```

1324 % hangul tail rieul-rieul
1325 begintsuglyph("uni11D0";208);
1326 hangul.combine.lr(608,508)(whatever;tixf,toxf);
1327 tsu_render;
1328 endtsuglyph;
1329

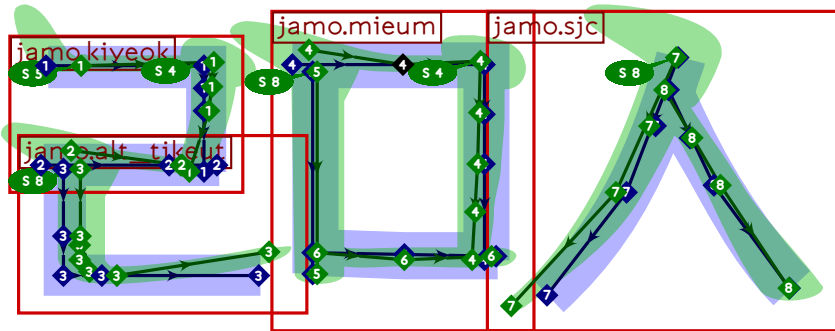
```



```

1330 % hangul tail rieul-mieum-kiyeok
1331 begint Suglyph("uni11D1",209);
1332   hangul.combine.lcr(608,516,501)(whatever,tixf,toxf);
1333   tsu_render;
1334 endtsuglyph;
1335

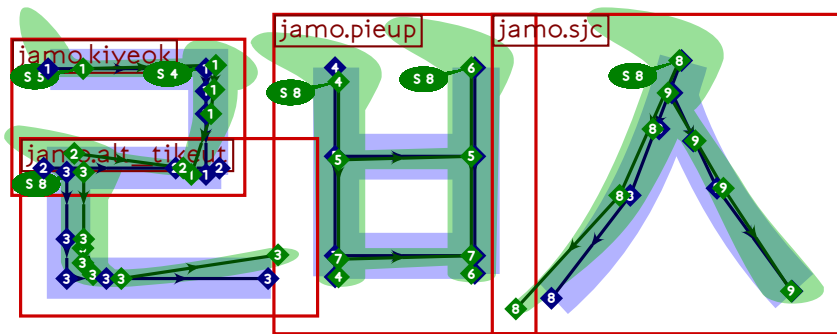
```



```

1336 % hangul tail rieul-mieum-sios
1337 begintsuglyph("uni11D2";210);
1338 hangul.combine.lcr(608,516,519)(whatever,tixf,toxf);
1339 tsu_render;
1340 endtsuglyph;
1341

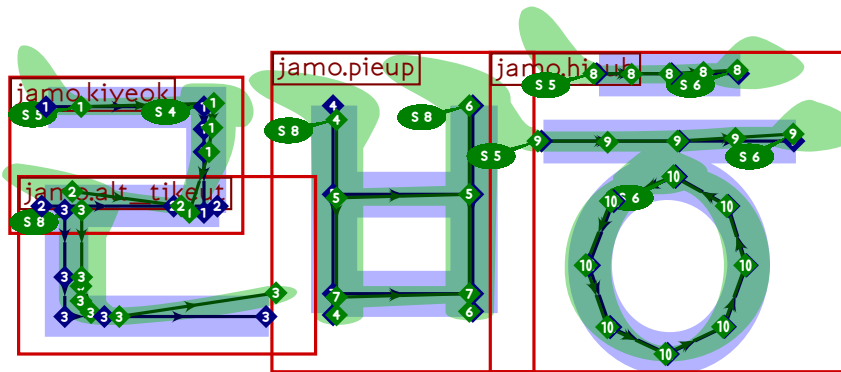
```



```

1342 % hangul tail rieul-pieup-sios
1343 begintsuglyph("uni11D3";211);
1344 hangul.combine.lcr(608,517,519)(whatever,tixf,toxf);
1345 tsu_render;
1346 endtsuglyph;
1347

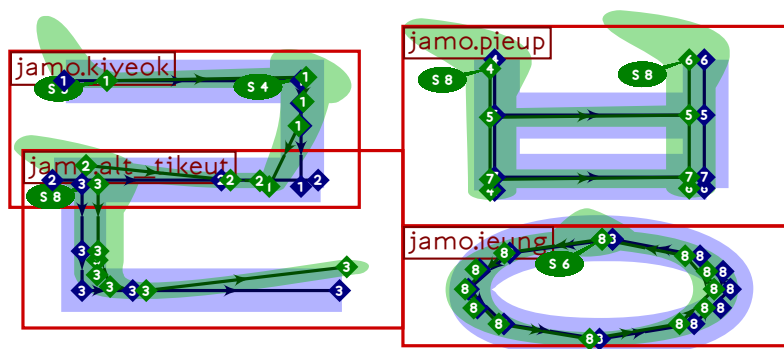
```



```

1348 % hangul tail rieul-pieup-hieuh
1349 begintsuglyph("uni11D4";212);
1350   hangul.combine.lcr(608,517,527)(whatever;tixf,toxf);
1351   tsu_render;
1352 endtsuglyph;
1353

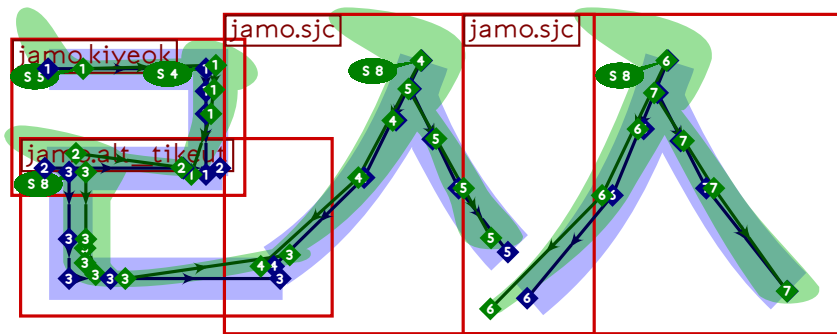
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1354 % hangul tail rieul-kapyeounpieup
1355 begintsuglyph("uni11D5";213);
1356 hangul.combine.lr(608,630)(whatever;tixf,toxf);
1357 tsu_render;
1358 endtsuglyph;
1359

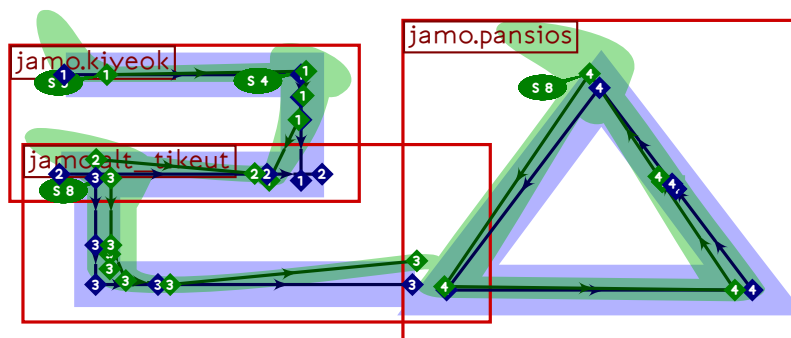
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1360 % hangul tail rieul-sios-sios
1361 begintsuglyph("uni11D6";214);
1362   hangul.combine.lcr(608,619,519)(whatever,tixf,toxf);
1363   tsu_render;
1364 endsuglyph;
1365

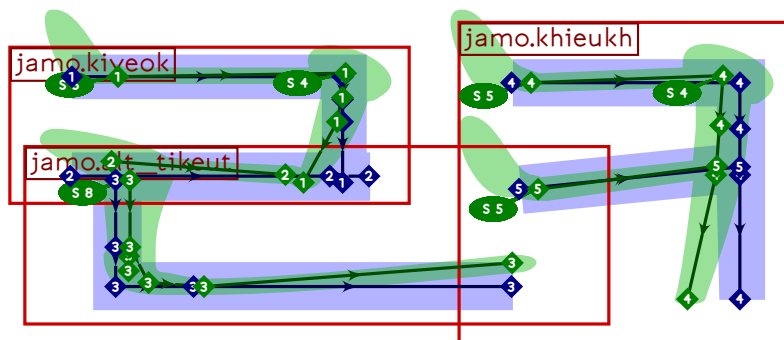
```



```

1366 % hangul tail rieul-pansios
1367 begintsuglyph("uni11D7";215);
1368   hangul.combine.lr(608,628)(whatever,tixf,toxf);
1369   tsu_render;
1370 endsuglyph;
1371

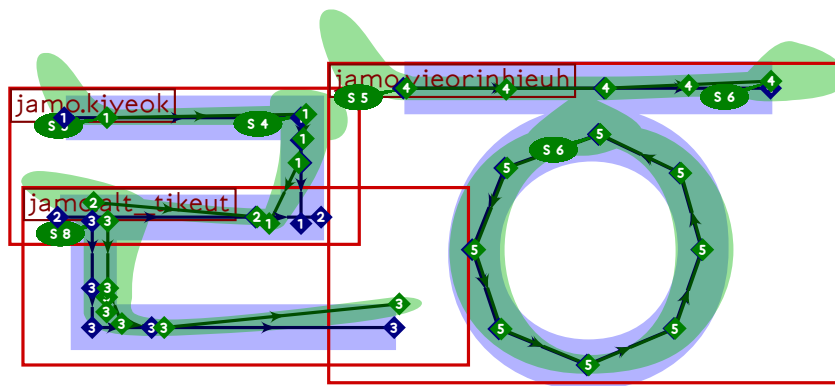
```



```

1372 % hangul tail rieul-khieukh
1373 begintsuglyph("uni11D8";216);
1374 hangul.combine.lr(608,524)(whatever,tixf,toxf);
1375 tsu_render;
1376 endtsuglyph;
1377

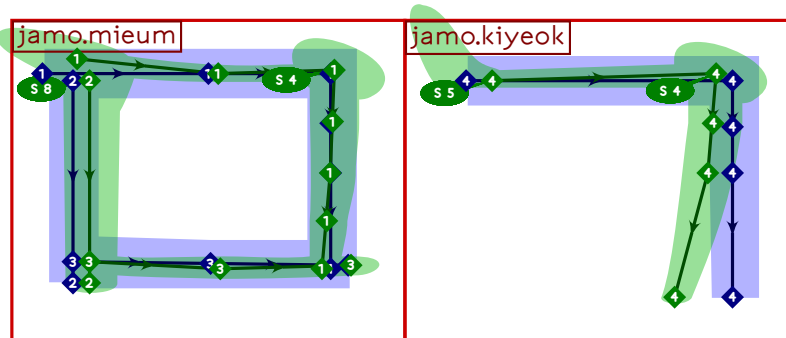
```



```

1378 % hangul tail rieul-yeorinhieuh
1379 begintsuglyph("uni11D9";217);
1380 hangul.combine.lr(608,631)(whatever,tixf,toxf);
1381 tsu_render;
1382 endsuglyph;
1383

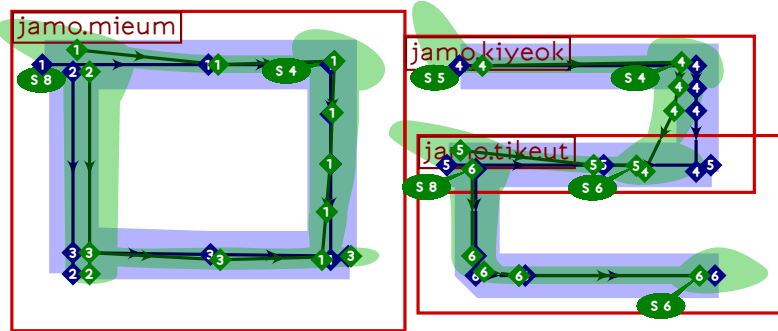
```



```

1384 % hangul tail mieum-kiyeok
1385 beginsuglyph("uni11DA";218);
1386   hangul.combine.lr(516,501)(whatever,tixf,toxf);
1387   tsu_render;
1388 endsuglyph;
1389

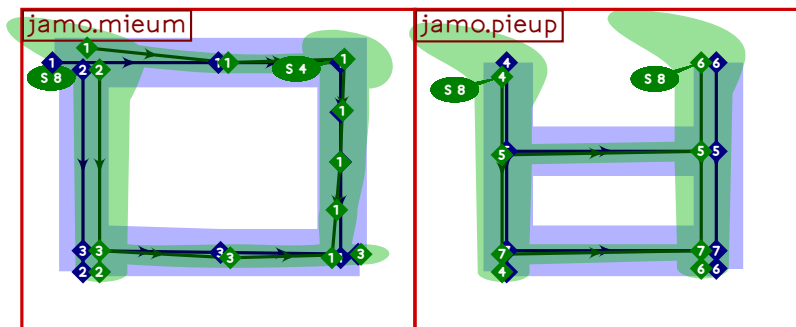
```



```

1390 % hangul tail mieum-rieul
1391 begintsuglyph("uni11DB";219);
1392   hangul.combine.lr(516,508)(whatever,tixf,toxf);
1393   tsu_render;
1394 endtsuglyph;
1395

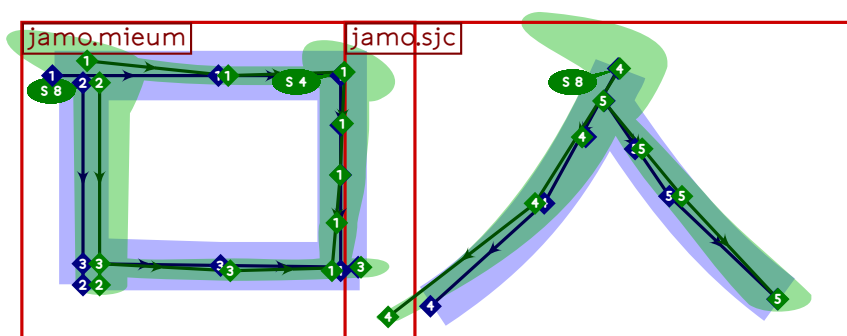
```



```

1396 % hangul tail mieum-pieup
1397 begintsuglyph("uni11DC",220);
1398   hangul.combine.lr(516,517)(whatever,tixf,toxf);
1399   tsu_render;
1400 endtsuglyph;
1401

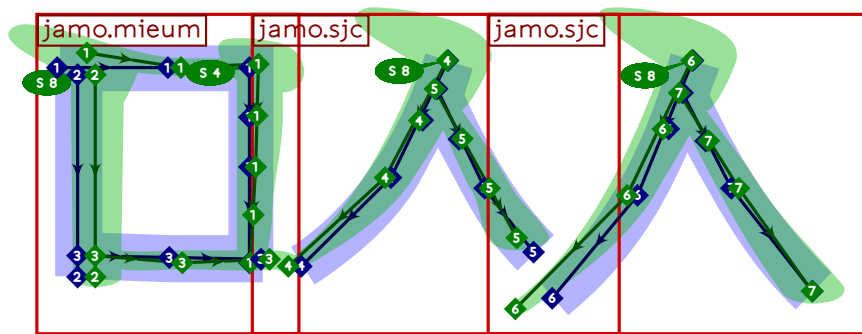
```



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1402 % hangul tail mieum-sios
1403 begintsuglyph("uni11DD",221);
1404   hangul.combine.lr(516,519)(whatever,tixf,toxf);
1405   tsu_render;
1406 endtsuglyph;
1407

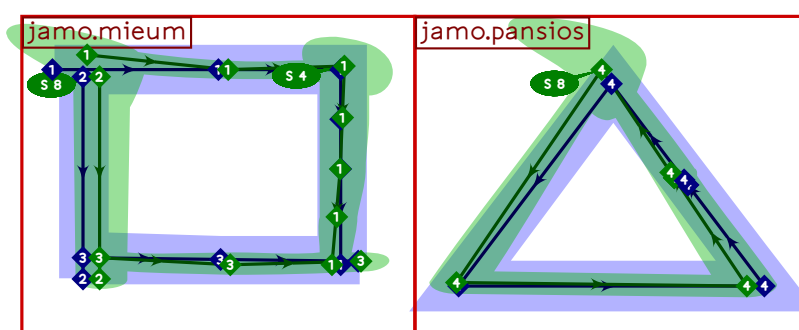
```

```

1408 % hangul tail mieum-sios-sios
1409 begintsuglyph("uni11DE";222);
1410   hangul.combine.lcr(516,619,519)(whatever;tixf,toxf);
1411   tsu_render;
1412 endtsuglyph;
1413

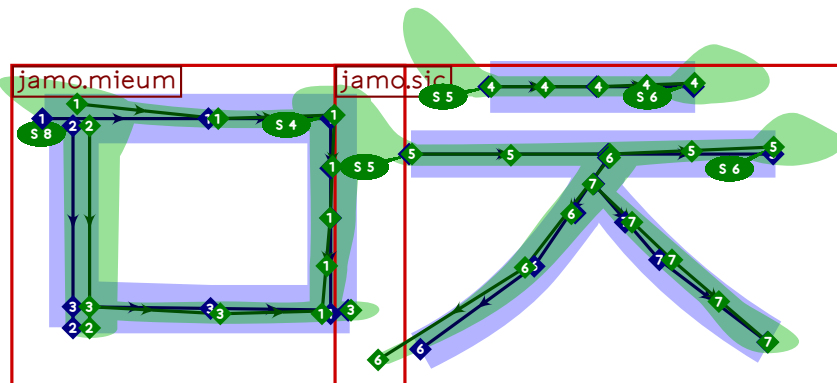
```



```

1414 % hangul tail mieum-pansios
1415 begintsuglyph("uni11DF";223);
1416   hangul.combine.lr(516,628)(whatever,tixf,toxf);
1417   tsu_render;
1418 endtsuglyph;
1419

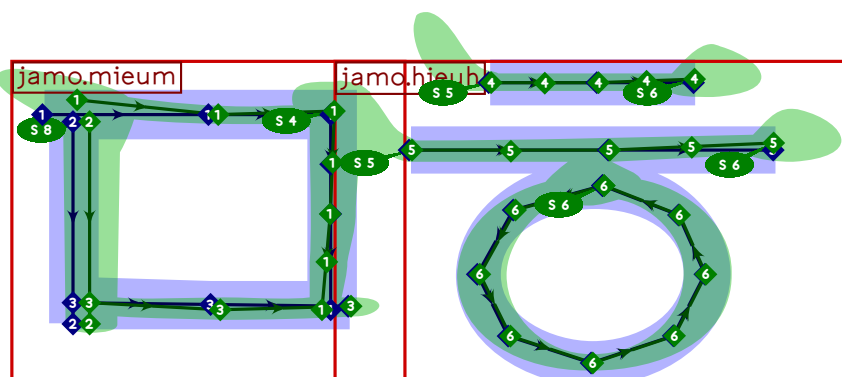
```



```

1420 % hangul tail mieum-chieuch
1421 begintsuglyph("uni11E0";224);
1422   hangul.combine.lr(516,523)(whatever,tixf,toxf);
1423   tsu_render;
1424 endtsuglyph;
1425

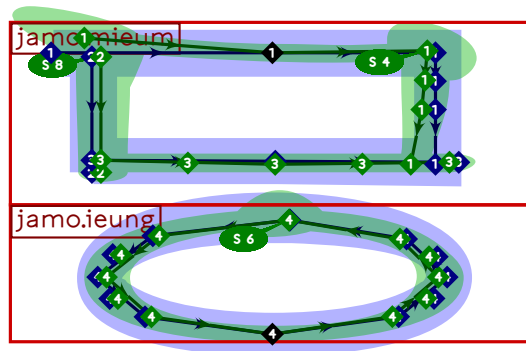
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1426 % hangul tail mieum-hieuh
1427 begintsuglyph("uni11E1",225);
1428   hangul.combine.lr(516,527)(whatever,tixf,toxf);
1429   tsu_render;
1430 endtsuglyph;
1431

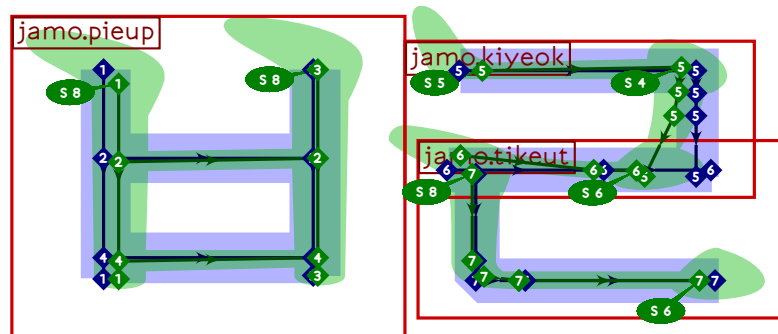
```



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1432 % hangul tail kapyeounmieum
1433 begintsuglyph("uni11E2";226);
1434   hangul.combine.tb(516,521)(whatever,
1435     hxf((200,850),(800,-50)) transformed tixf,toxf);
1436   tsu_render;
1437 endtsuglyph;
1438

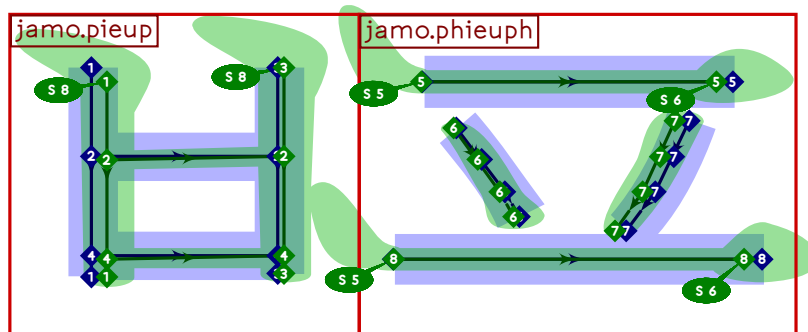
```



```

1439 % hangul tail pieup-rieul
1440 begintsuglyph("uni11E3";227);
1441   hangul.combine.lr(517,508)(whatever,tixf,toxf);
1442   tsu_render;
1443 endtsuglyph;
1444

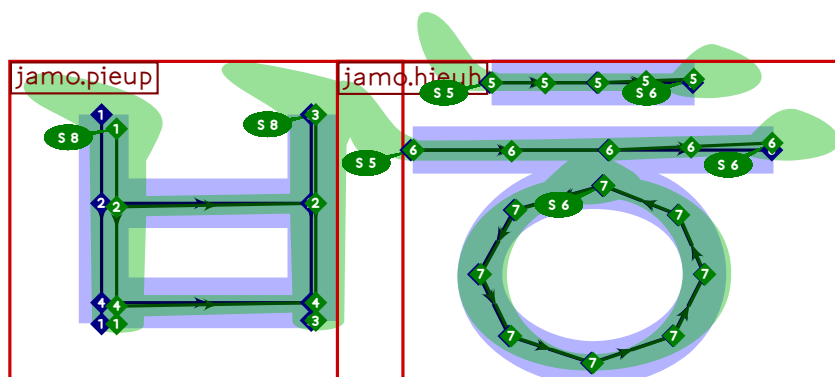
```



```

1445 % hangul tail pieup-phieuph
1446 begintsuglyph("uni11E4";228);
1447   hangul.combine.lr(517,526)(whatever,tixf,toxf);
1448   tsu_render;
1449 endtsuglyph;
1450

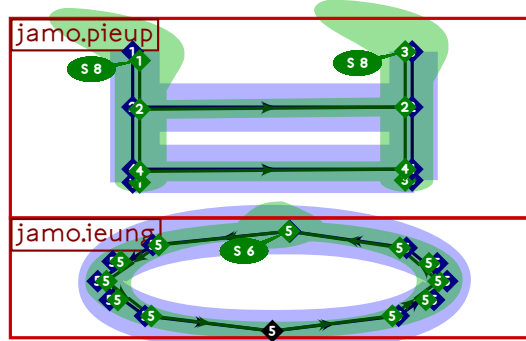
```



```

1451 % hangul tail pieup-hieuh
1452 begintsuglyph("uni11E5";229);
1453   hangul.combine.lr(517,527)(whatever;tixf,toxf);
1454   tsu_render;
1455 endtsuglyph;
1456

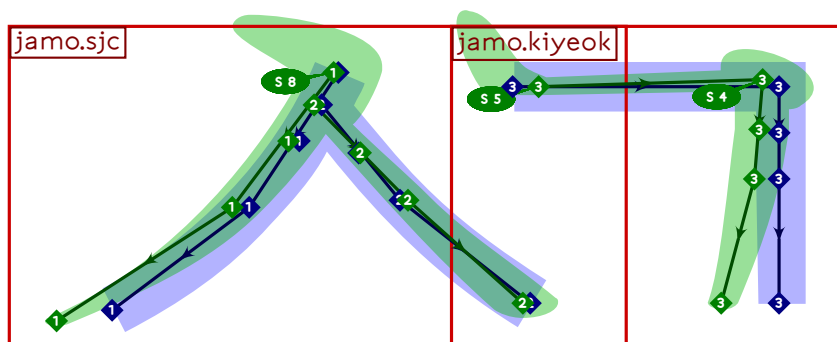
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1457 % hangul tail kapyeounpieup
1458 begintsuglyph("uni11E6",230);
1459   hangul.combine.tb(517,521)(whatever,
1460     hxf((200,850),(800,-50)) transformed tixf,toxf);
1461   tsu_render;
1462 endtsuglyph;
1463

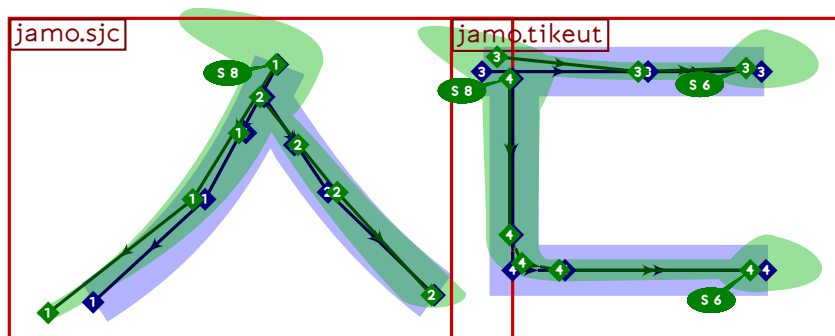
```



```

1464 % hangul tail sios-kiyeok
1465 begintsuglyph("uni11E7";231);
1466   hangul.combine.lr(519,501)(whatever;tixf,toxf);
1467   tsu_render;
1468 endtsuglyph;
1469

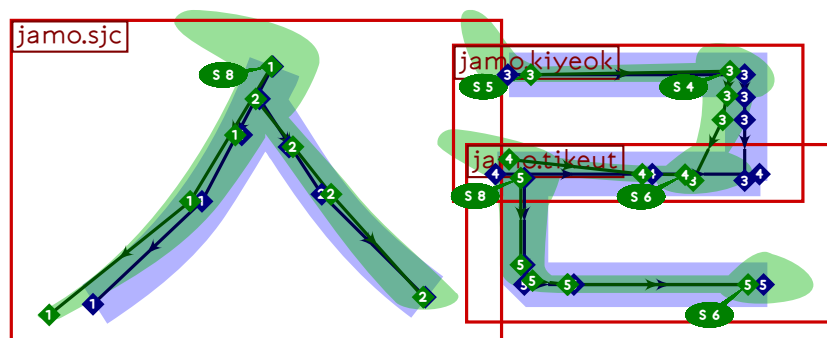
```



```

1470 % hangul tail sios-tikeut
1471 begintsuglyph("uni11E8";232);
1472   hangul.combine.lr(519,507)(whatever,tixf,toxf);
1473   tsu_render;
1474 endtsuglyph;
1475

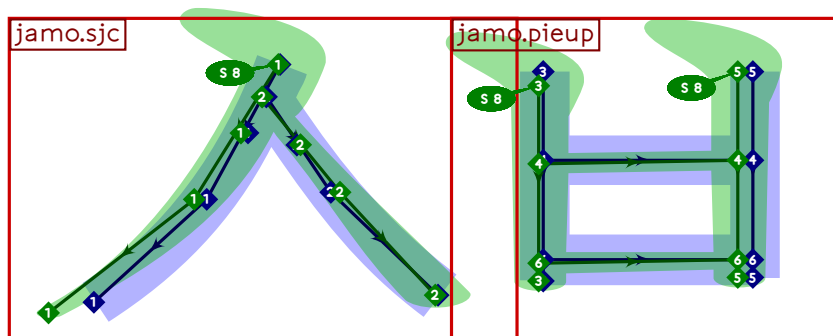
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```

1476 % hangul tail sios-rieul
1477 begint Suglyph("uni11E9";233);
1478   hangul.combine.lr(519,508)(whatever,tixf,toxf);
1479   tsu_render;
1480 endtsuglyph;
1481

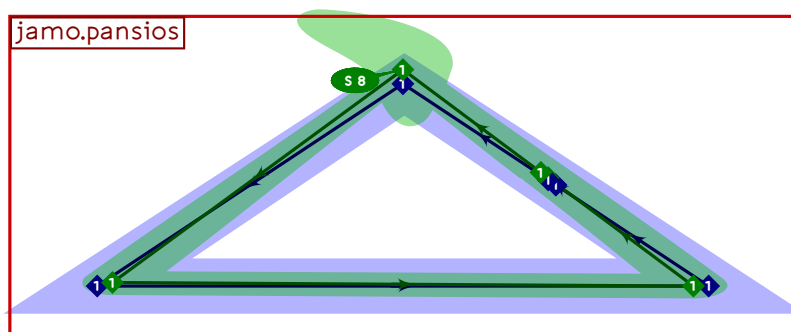
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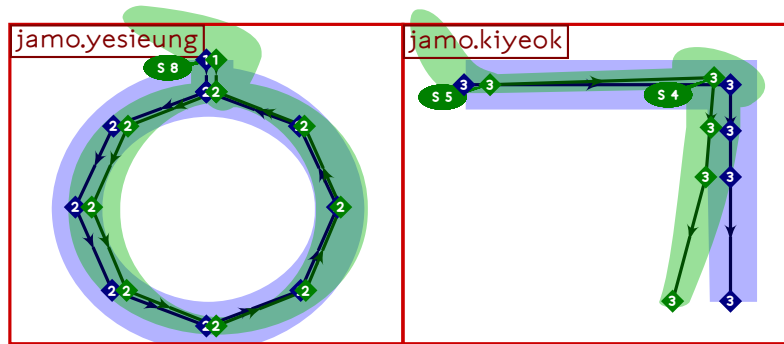
```

1482 % hangul tail sios-pieup
1483 begintsuglyph("uni11EA";234);
1484   hangul.combine.lr(519,517)(whatever,tixf,toxf);
1485   tsu_render;
1486 endtsuglyph;
1487

```



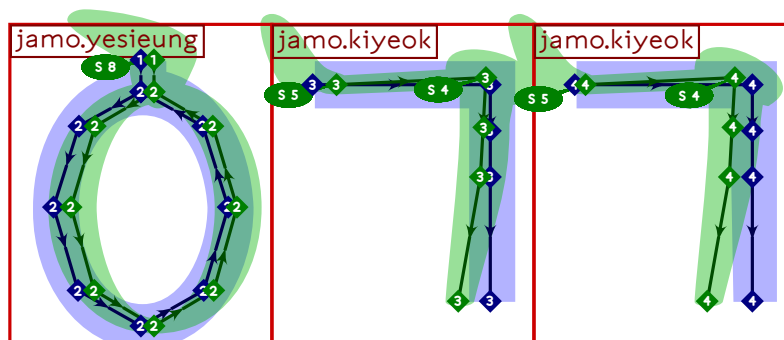
```
1488 % hangul tail pansios
1489 begint Suglyph("uni11EB";235);
1490 hangul.jamo.pansios(whatever,tixf,toxf);
1491 tsu_render;
1492 endtsuglyph;
1493
```



```

1494 % hangul tail yesieung-kiyeok
1495 beginsuglyph("uni11EC";236);
1496   hangul.combine.lr(629,501)(whatever,tixf,toxf);
1497   tsu_render;
1498 endsuglyph;
1499

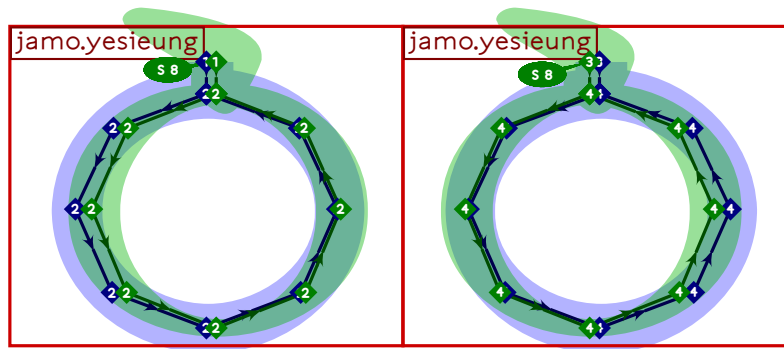
```



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1500 % hangul tail yesieung-kiyeok-kiyeok
1501 beginsuglyph("uni11ED";237);
1502   hangul.combine.lcr(629,501,501)(whatever,tixf,toxf);
1503   tsu_render;
1504 endsuglyph;
1505

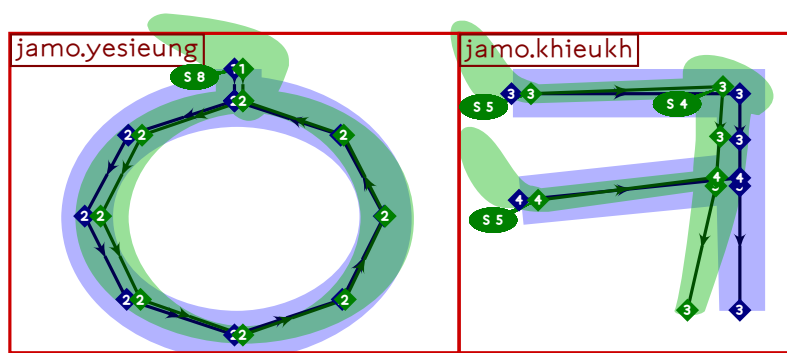
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```

1506 % hangul tail yesieung-yesieung
1507 begintsuglyph("uni11EE";238);
1508   hangul.combine.lr(629,629)(whatever,tixf,toxf);
1509   tsu_render;
1510 endtsuglyph;
1511

```



```

1512 % hangul tail yesieung-khieukh
1513 beginsuglyph("uni11EF";239);
1514   hangul.combine.lr(629,524)(whatever,tixf,toxf);
1515   tsu_render;
1516 endsuglyph;
1517

```



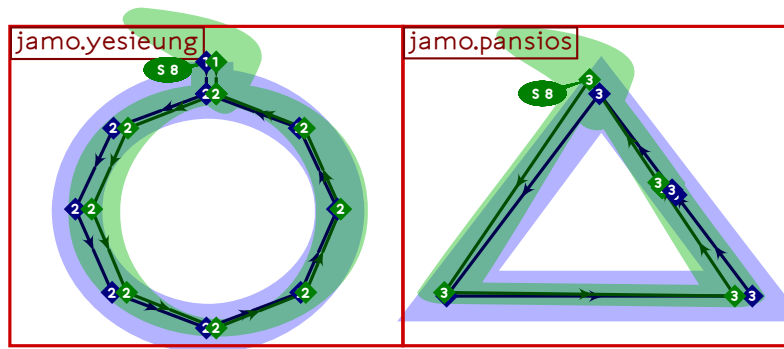
11



```

1524 % hangul tail yesieung-sios
1525 begint Suglyph("uni11F1";241);
1526   hangul.combine.lr(629,519)(whatever,tixf,toxf);
1527   tsu__render;
1528 endts Suglyph;
1529

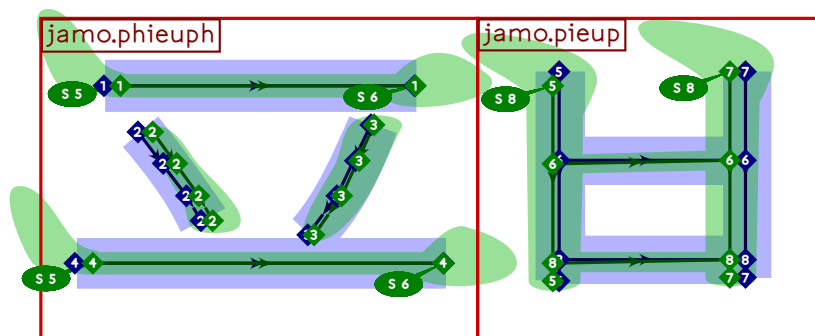
```



```

1530 % hangul tail yesieung-pansios
1531 beginsuglyph("uni11F2";242);
1532   hangul.combine.lr(629,628)(whatever,tixf,toxf);
1533   tsu_render;
1534 endsuglyph;
1535

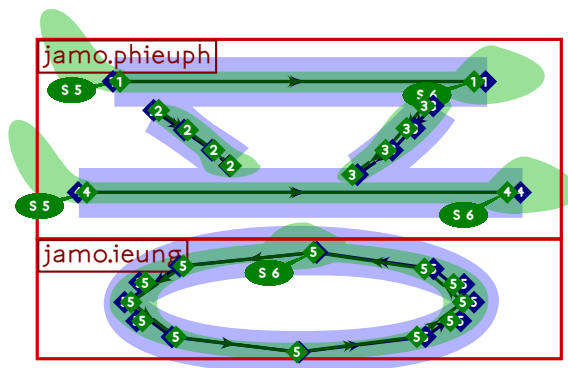
```



```

1536 % hangul tail phieuph-pieup
1537 begintsuglyph("uni11F3",243);
1538   hangul.combine.lr(526,517)(whatever,tixf,toxf);
1539   tsu_render;
1540 endsuglyph;
1541

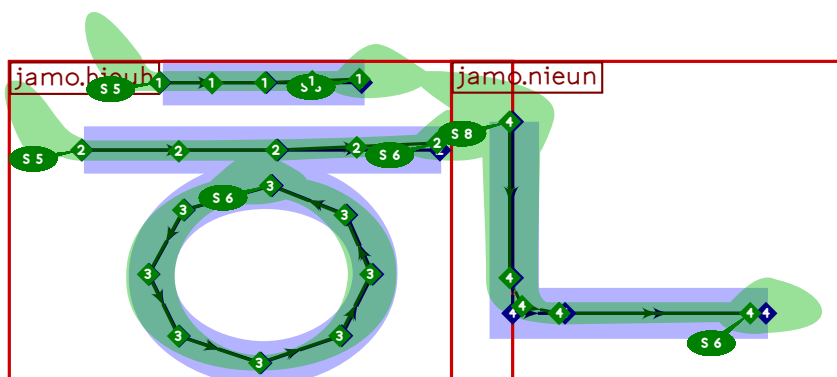
```



```

1542 % hangul tail kapyeounphieuph
1543 begintsuglyph("uni11F4",244);
1544   hangul.combine.tb(526,521)(whatever,
1545     hxf((250,850),(850,-50)) transformed tixf,toxf);
1546   tsu_render;
1547 endtsuglyph;
1548

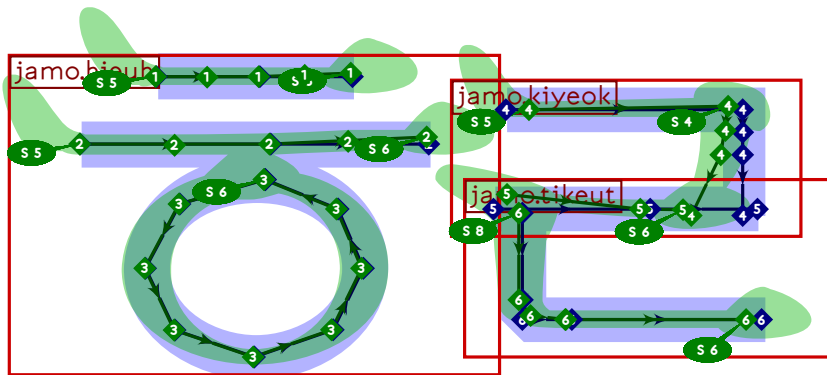
```



```

1549 % hangul tail hieuh-nieun
1550 begintsuglyph("uni11F5",245);
1551   hangul.combine.lr(527,504)(whatevertixf,toxf);
1552   tsu_render;
1553 endtsuglyph;
1554

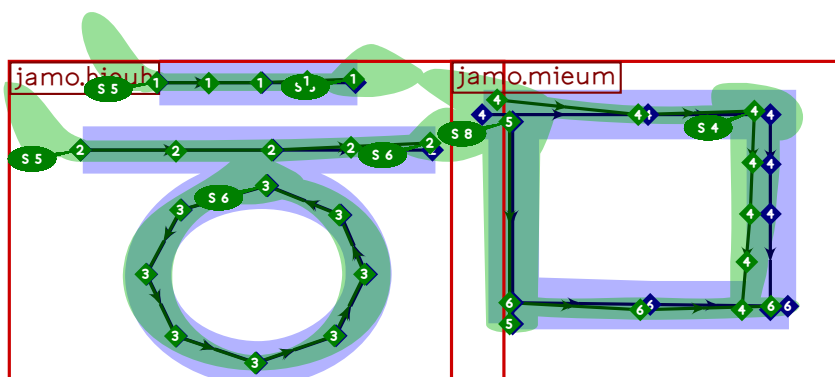
```

```

1555 % hangul tail hieuh-rieul
1556 begint Suglyph("uni11F6",246);
1557   hangul.combine.lr(527,508)(whatever,tixf,toxf);
1558   tsu_render;
1559 endtsuglyph;
1560

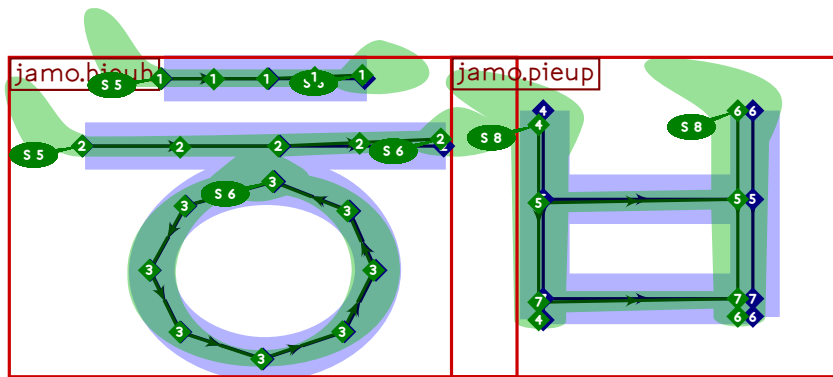
```



```

1561 % hangul tail hieuh-mieum
1562 beginsuglyph("uni11F7";247);
1563   hangul.combine.lr(527,516)(whatever,tixf,toxf);
1564   tsu__render;
1565 endsuglyph;
1566

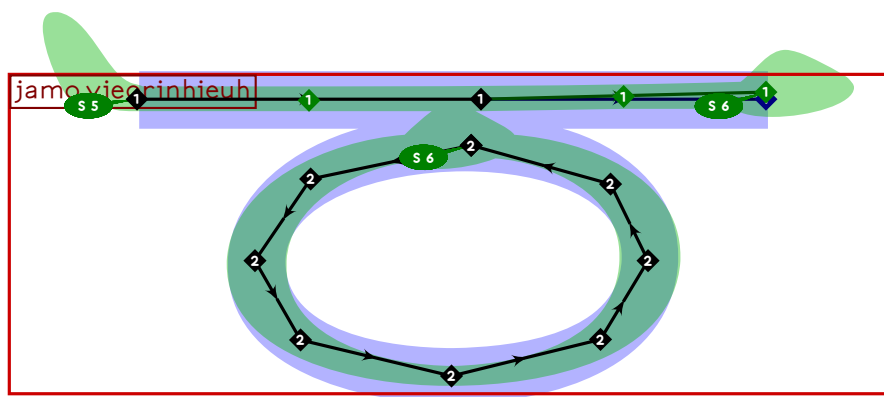
```



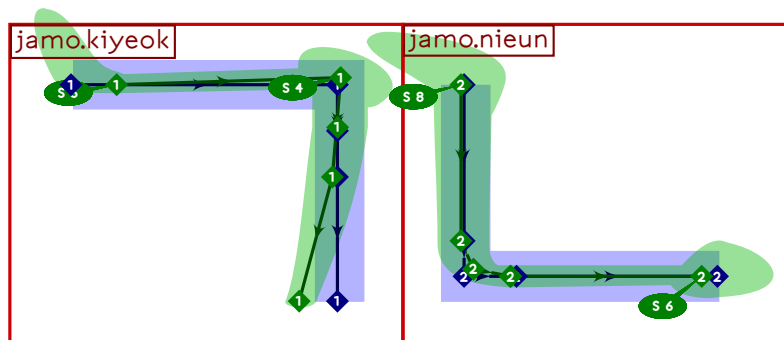
```

1567 % hangul tail hieuh-pieup
1568 begintsuglyph("uni11F8";248);
1569   hangul.combine.lr(527,517)(whatever,tixf,toxf);
1570   tsu_render;
1571 endtsuglyph;
1572

```



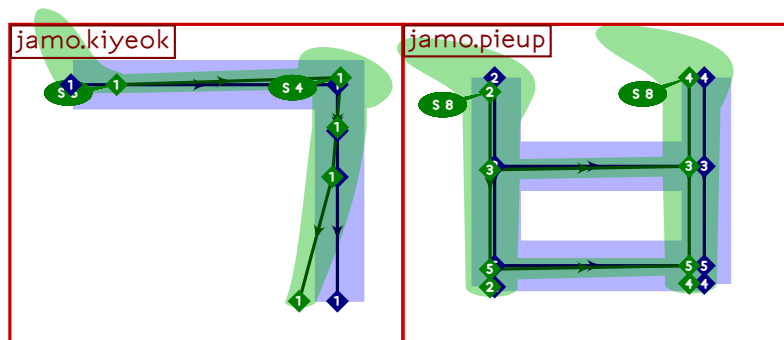
```
1573 % hangul tail yeorinhieuh
1574 begint Suglyph("uni11F9",249);
1575   hangul.jamo.yeorinhieuh(whatever,tixf,toxf);
1576   tsu_render;
1577 endtsuglyph;
1578
```



```

1579 % hangul tail kiyeok-nieun
1580 begint Suglyph("uni11FA",250);
1581   hangul.combine.lr(501,504)(whatever,tixf,toxf);
1582   tsu_render;
1583 endtsuglyph;
1584

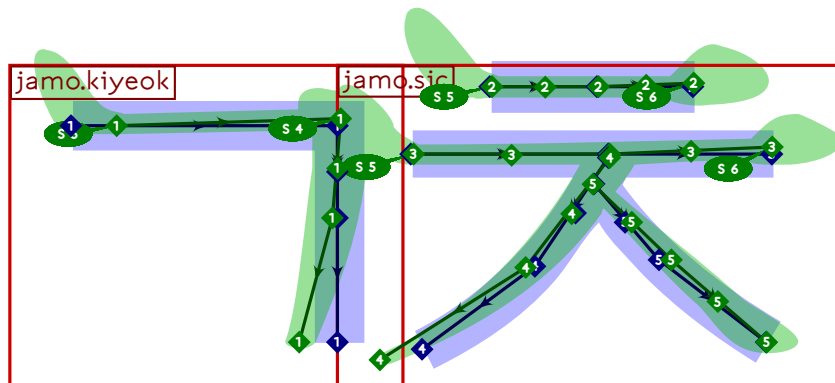
```



```

1585 % hangul tail kiyeok-pieup
1586 begintsuglyph("uni11FB";251);
1587   hangul.combine.lr(501,517)(whatever,tixf,toxf);
1588   tsu_render;
1589 endtsuglyph;
1590

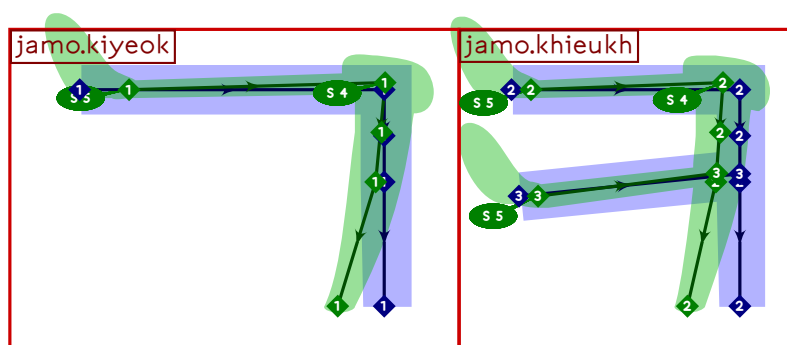
```



```

1591 % hangul tail kiyeok-chieuch
1592 begintsuglyph("uni11FC";252);
1593   hangul.combine.lr(501,523)(whatever,tixf,toxf);
1594   tsu_render;
1595 endtsuglyph;
1596

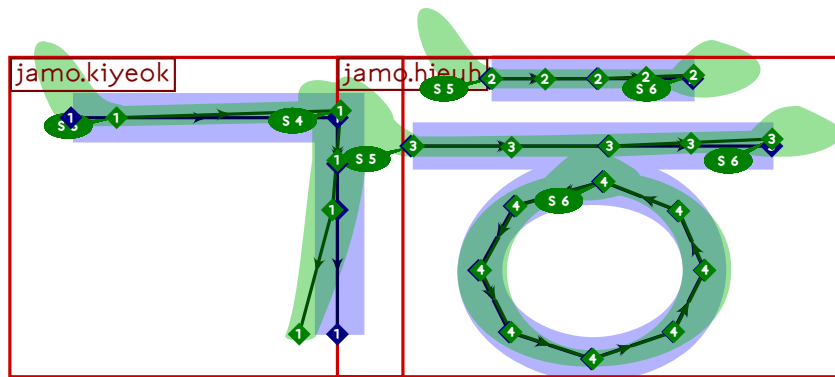
```



```

1597 % hangul tail kiyeok-khieukh
1598 begintsuglyph("uni11FD";253);
1599   hangul.combine.lr(501,524)(whatever,tixf,toxf);
1600   tsu_render;
1601 endtsuglyph;
1602

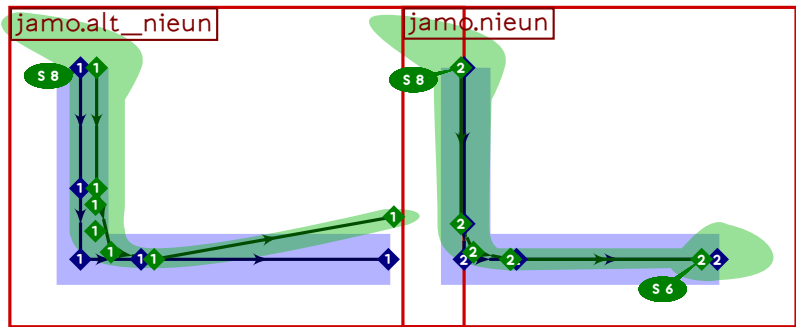
```

```

1603 % hangul tail kiyeok-hieuh
1604 begintsuglyph("uni11FE";254);
1605   hangul.combine.lr(501,527)(whatever,tixf,toxf);
1606   tsu_render;
1607 endtsuglyph;
1608

```



```
1609 % hangul tail ssangnieun
1610 begintsuglyph("uni11FF";255);
1611   hangul.combine.lr(604,504)(whatever,tixf,toxf);
1612   tsu_render;
1613 endtsuglyph;
1614
1615
1616
1617 endfont;
1618
1619
```

mande-31.mp

```
1 %
2 % Unicode page 31 (Hangul Compatibility Jamo) for Mandeubsida
3 % Copyright (C) 2011, 2012, 2013 Matthew Skala
4 %
5-29 [Standard copyright notice]
30
31 

---

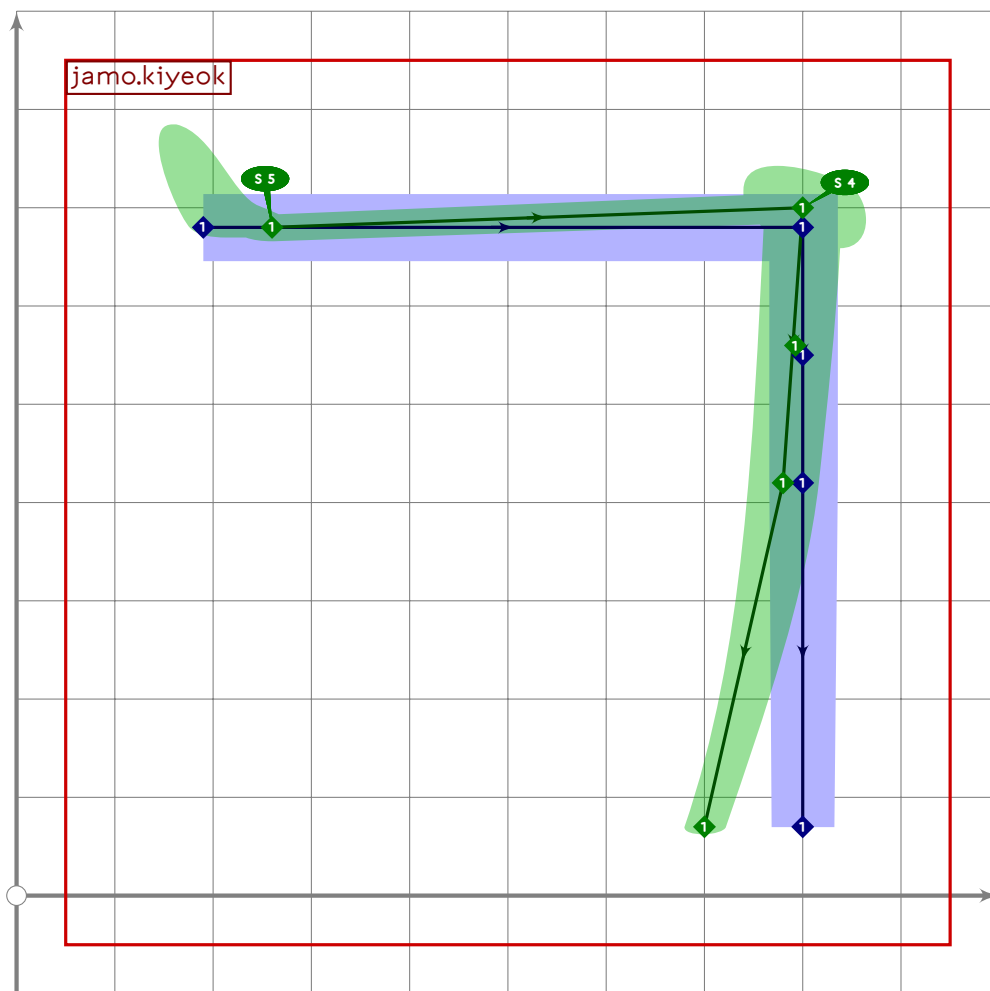

32
33 beginfont
34
35 % AUTODEPS
36 input hangul.mp;
37 input jamo-basic.mp;
38 input jamo-extra.mp;
39
40 do_late_includes;
41
42 

---


43
```

Hangul Compatibility Jamo

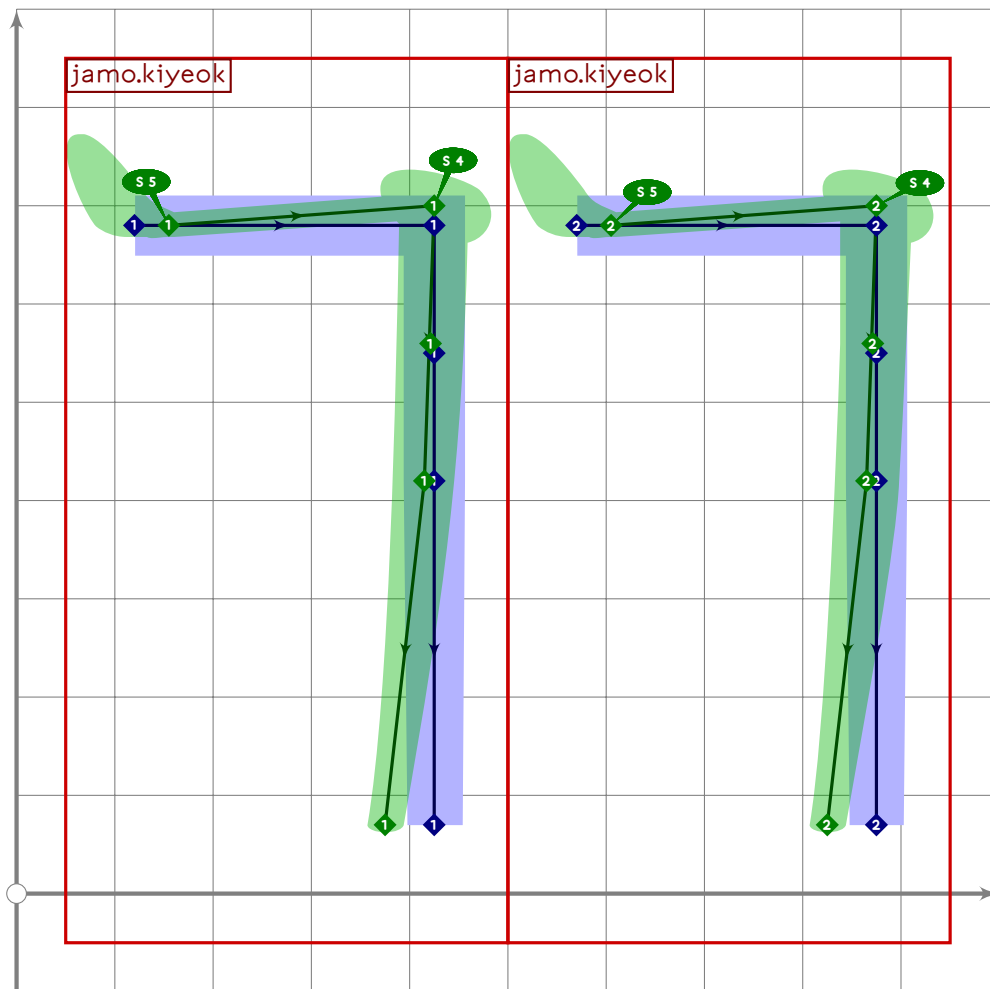
```
44 % HANGUL COMPATIBILITY JAMO
45
```



```

46 % hangul kiyeok
47 begint Suglyph("uni3131";49);
48   hangul.jamo.kiyeok(whatever;identity;identity);
49   tsu_render;
50 endtsuglyph;
51

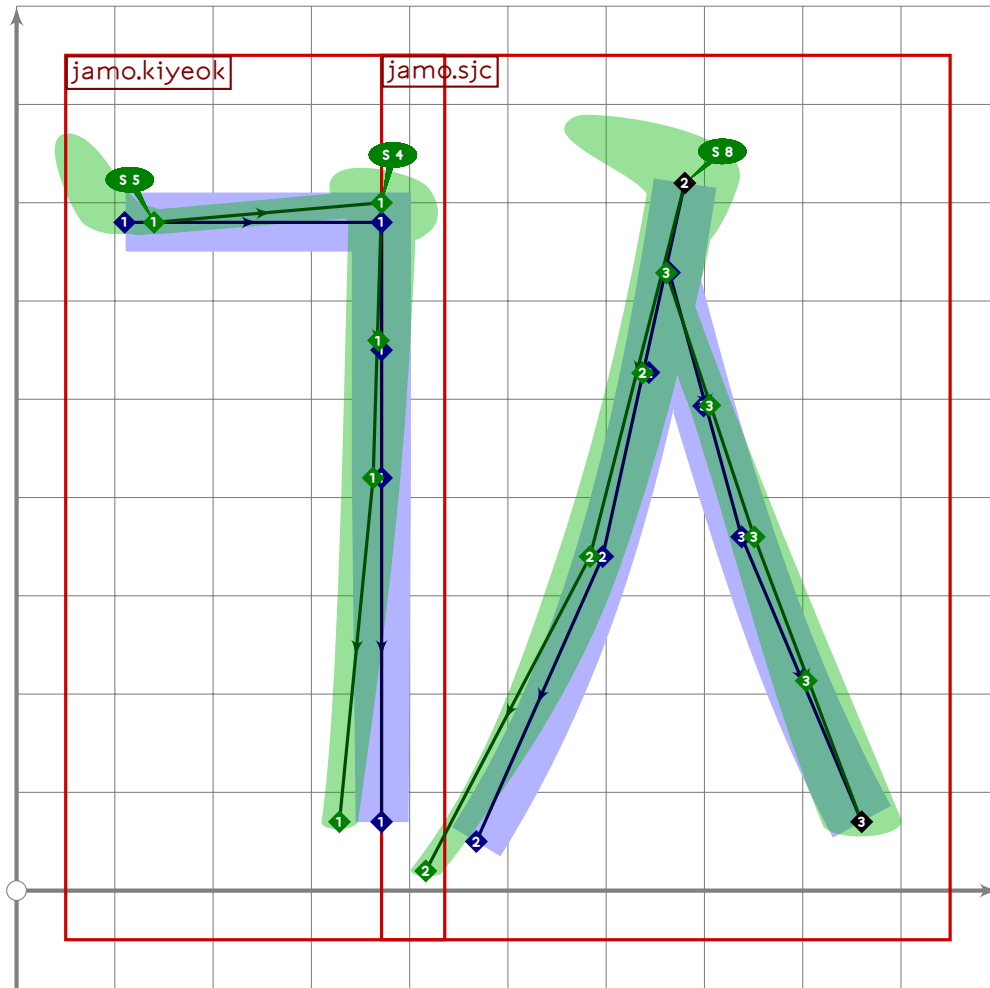
```



```

52 % hangul ssangkiyeok
53 beginsuglyph("uni3132";50);
54   hangul.combine.lr(100,100)(whatever;identity;identity);
55   tsu_render;
56 endsuglyph;
57

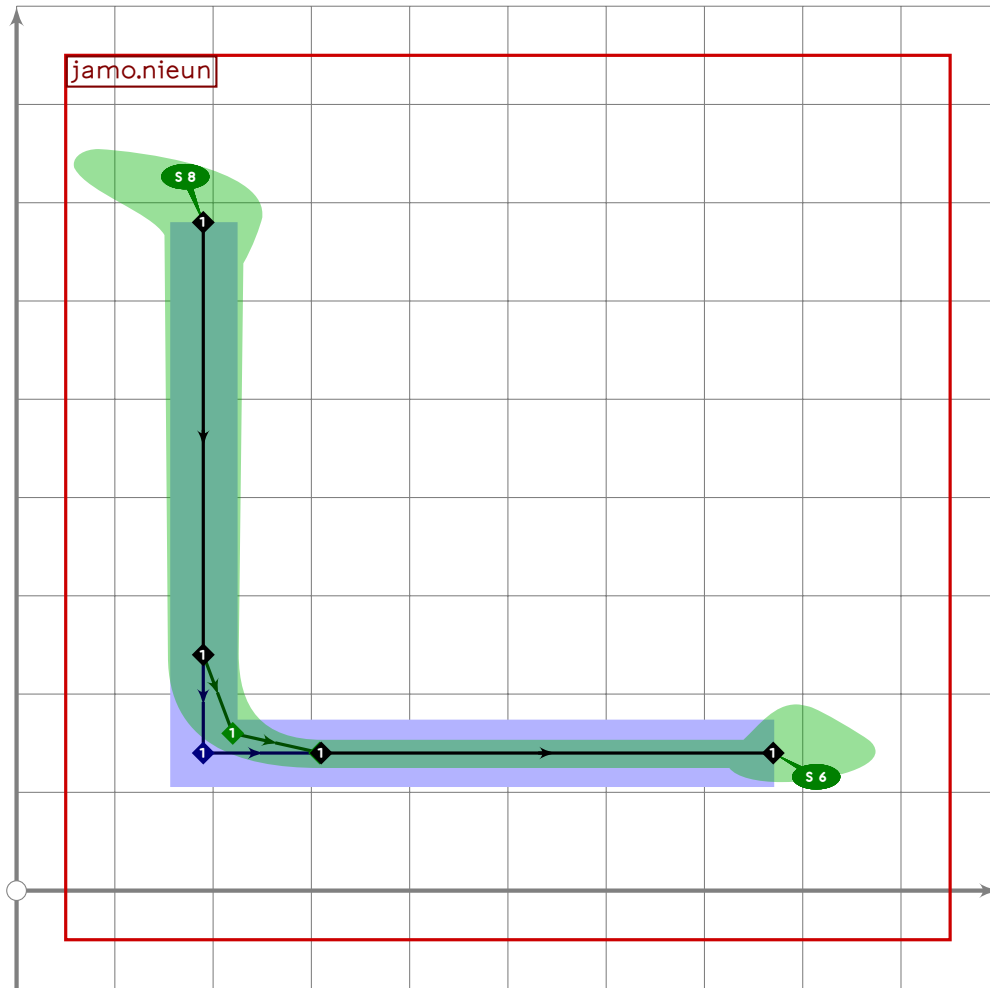
```



```

58 % hangul kiyeok-sios
59 begintsuglyph("uni3133";51);
60 hangul.combine.lr(100,109)(whatever;identity,identity);
61 tsu_render;
62 endsuglyph;
63

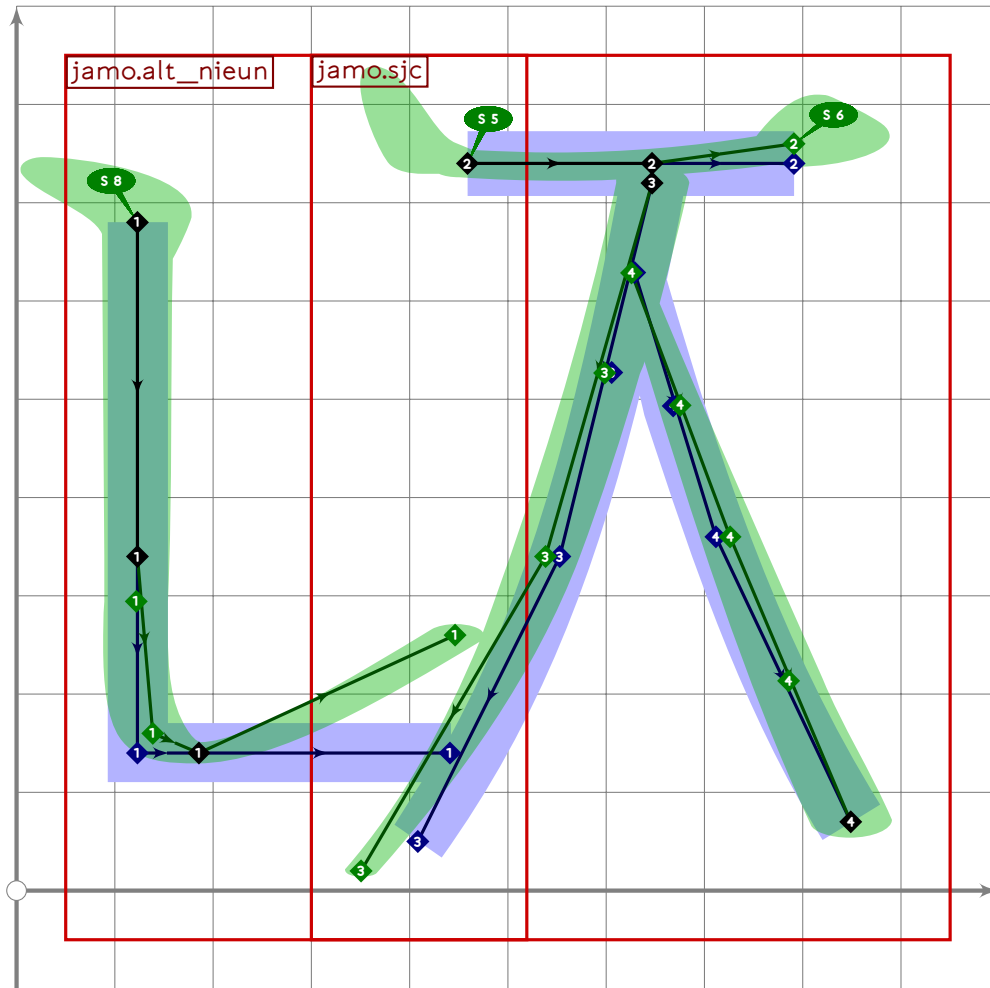
```



```

64 % hangul nieun
65 beginsuglyph("uni3134";52);
66 hangul.jamo.nieun(whatever;identity;identity);
67 tsu_render;
68 endsuglyph;
69

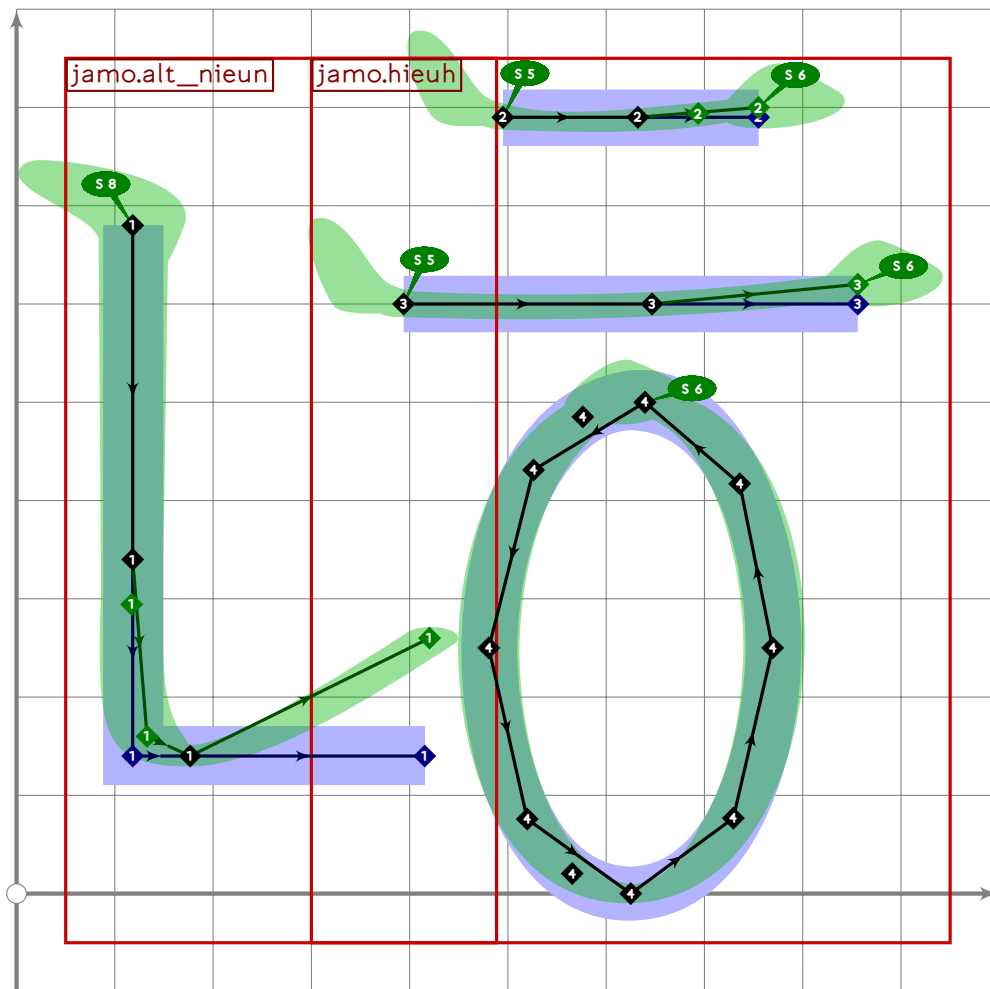
```



```

70 % hangul nieun-cieuc
71 beginsuglyph("uni3135";53);
72 hangul.combine.lr(202,112)(whatever;identity;identity);
73 tsu_render;
74 endsuglyph;
75

```

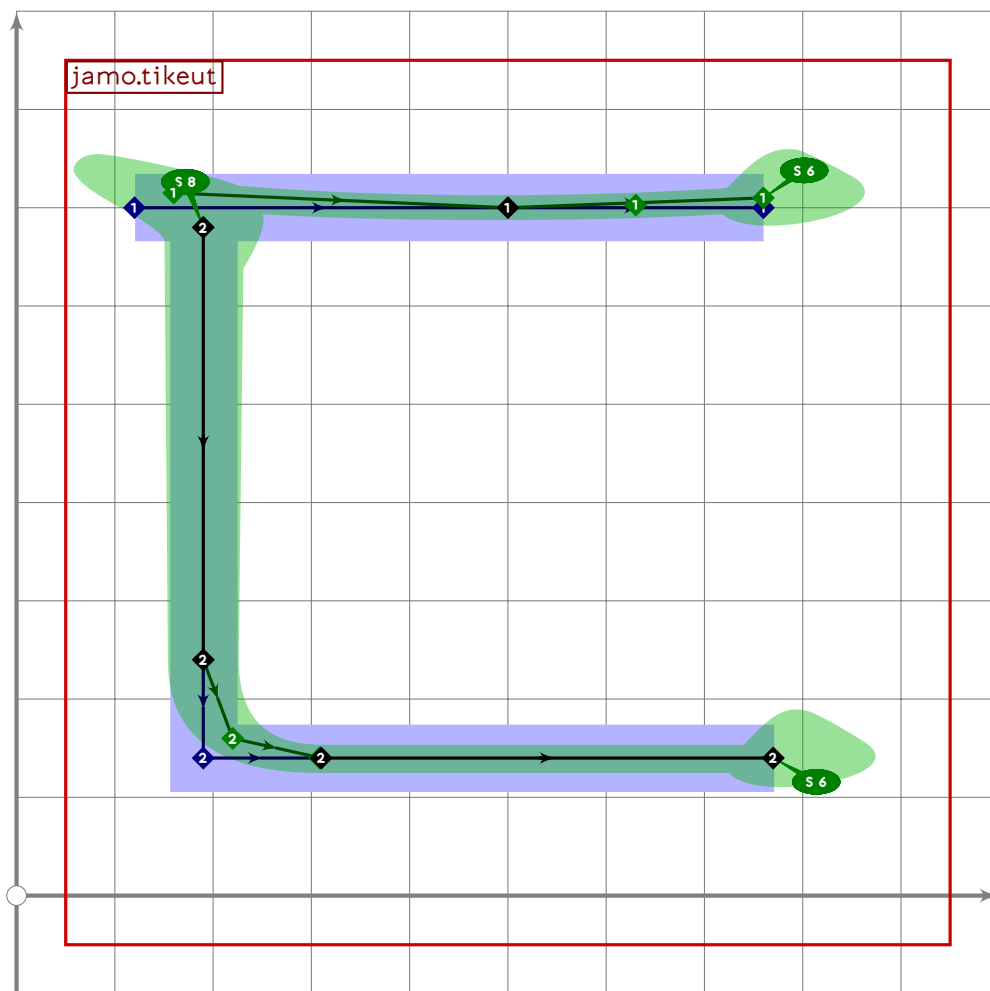



```

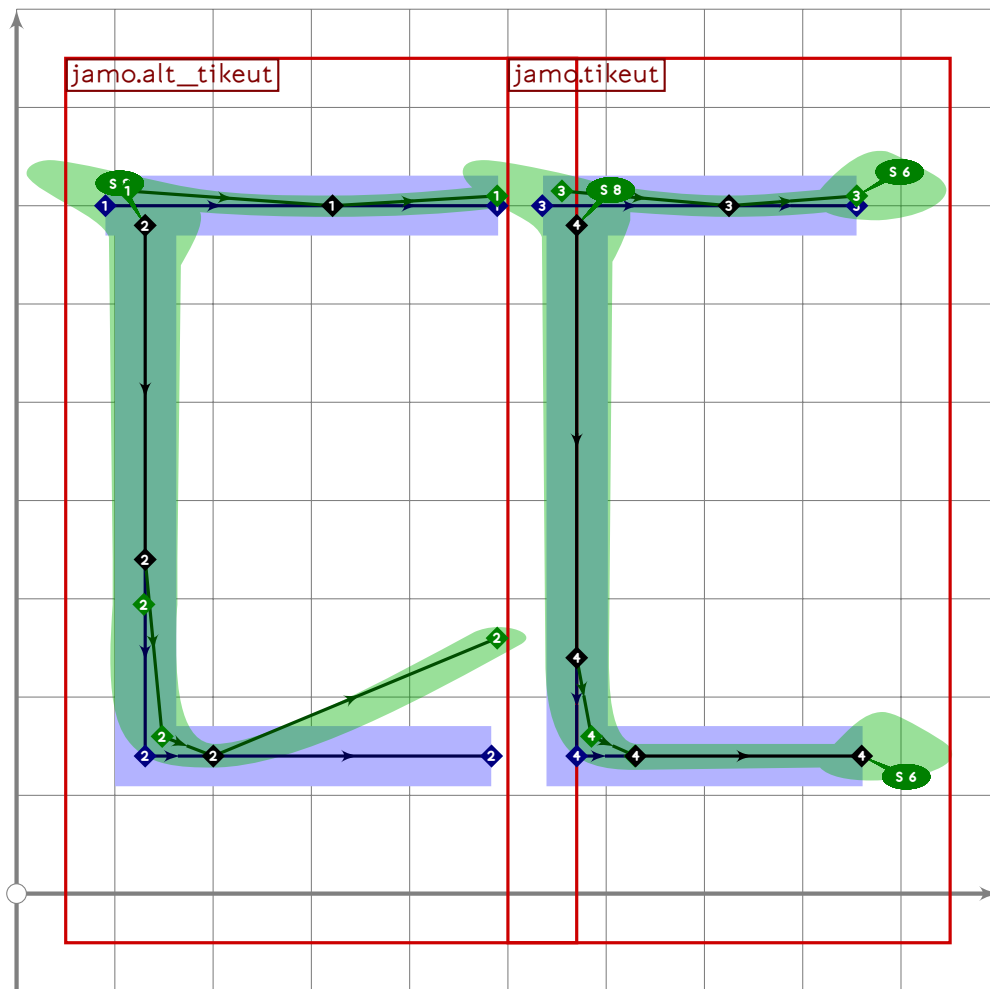
76 % hangul nieun-hieuh
77 beginsuglyph("uni3136";54);
78 hangul.combine.lr(202,118)(whatever;identity,identity);
79 tsu_render;
80 endsuglyph;
81

```

U+3137
mande.uni3137



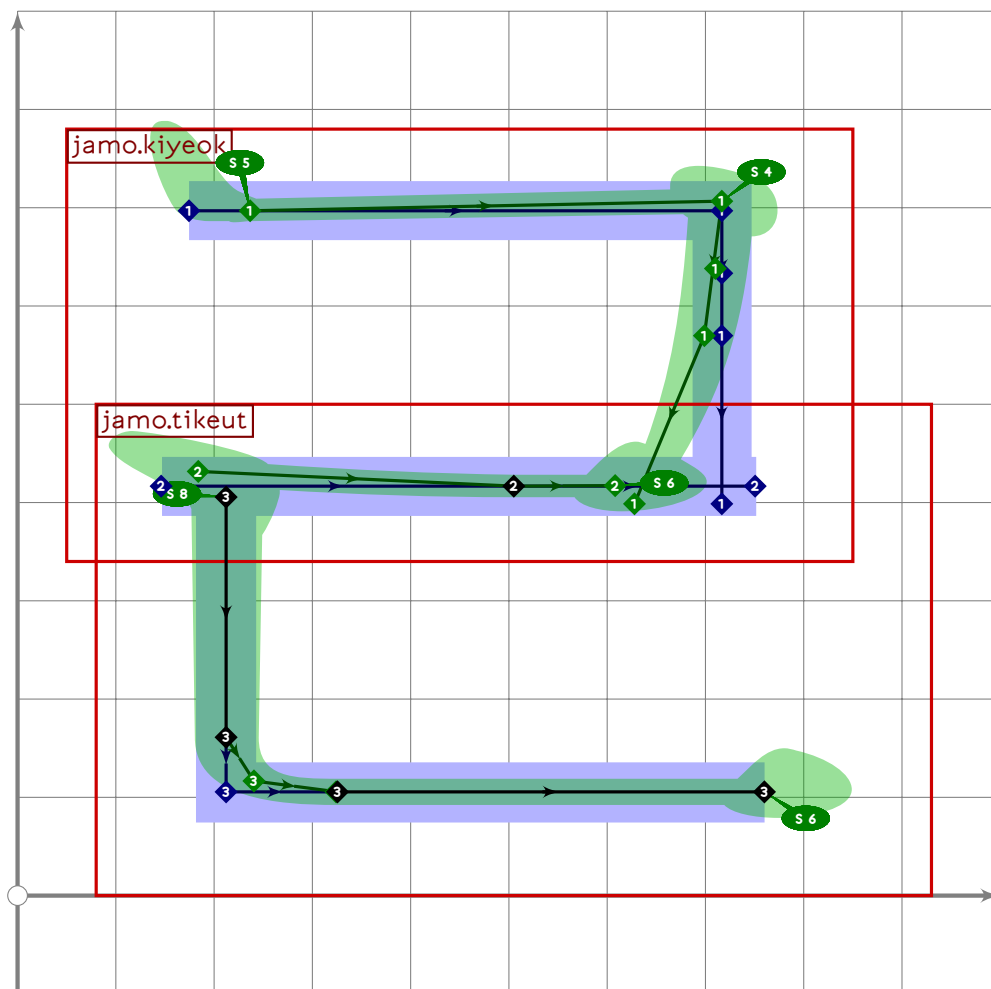
```
82 % hangul tikeut
83 beginsuglyph("uni3137";55);
84 hangul.jamo.tikeut(whatever;identity;identity);
85 tsu_render;
86 endsuglyph;
87
```



```

88 % hangul ssangtikeut
89 begintsuglyph("uni3138";56);
90   hangul.combine.lr(203,103)(whatever,identity,identity);
91   tsu_render;
92 endsuglyph;
93

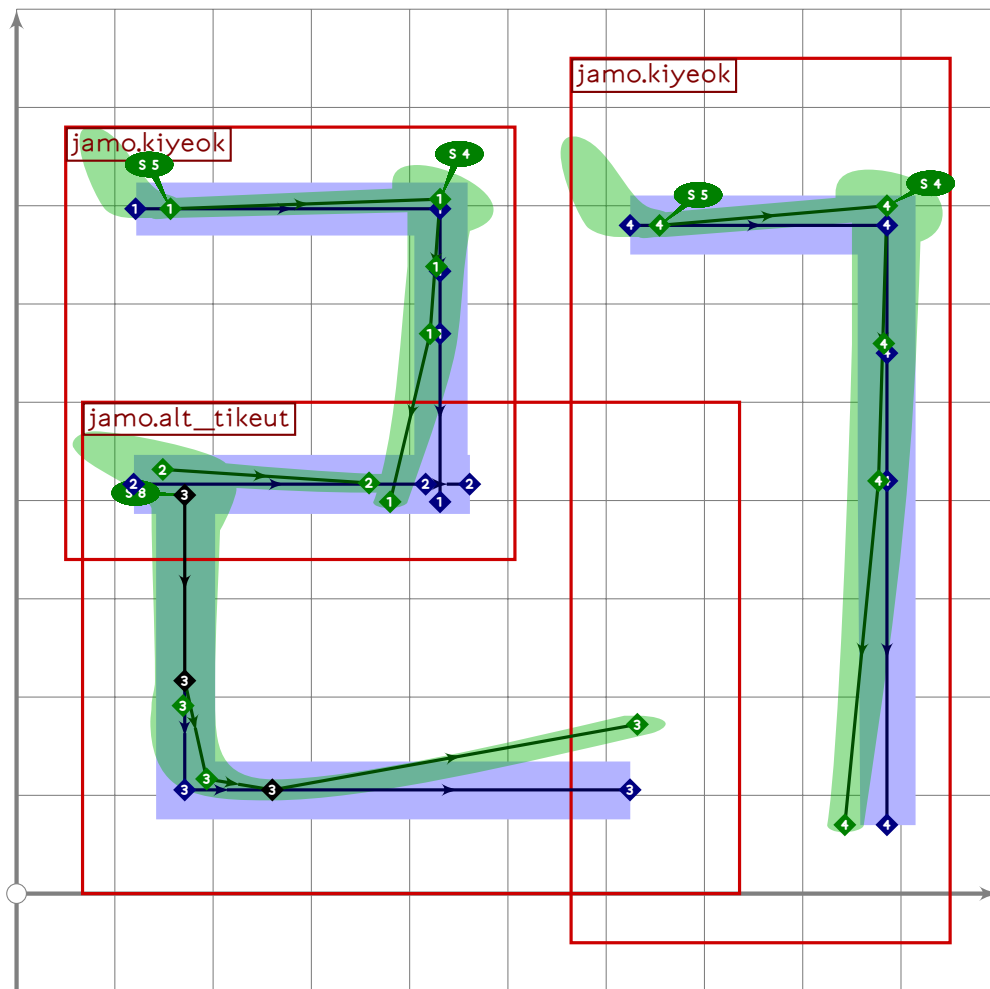
```



```

94 % hangul rieul
95 beginsuglyph("uni3139";57);
96   hangul.jamo.rieul(whatever;identity;identity);
97   tsu_render;
98 endsuglyph;
99

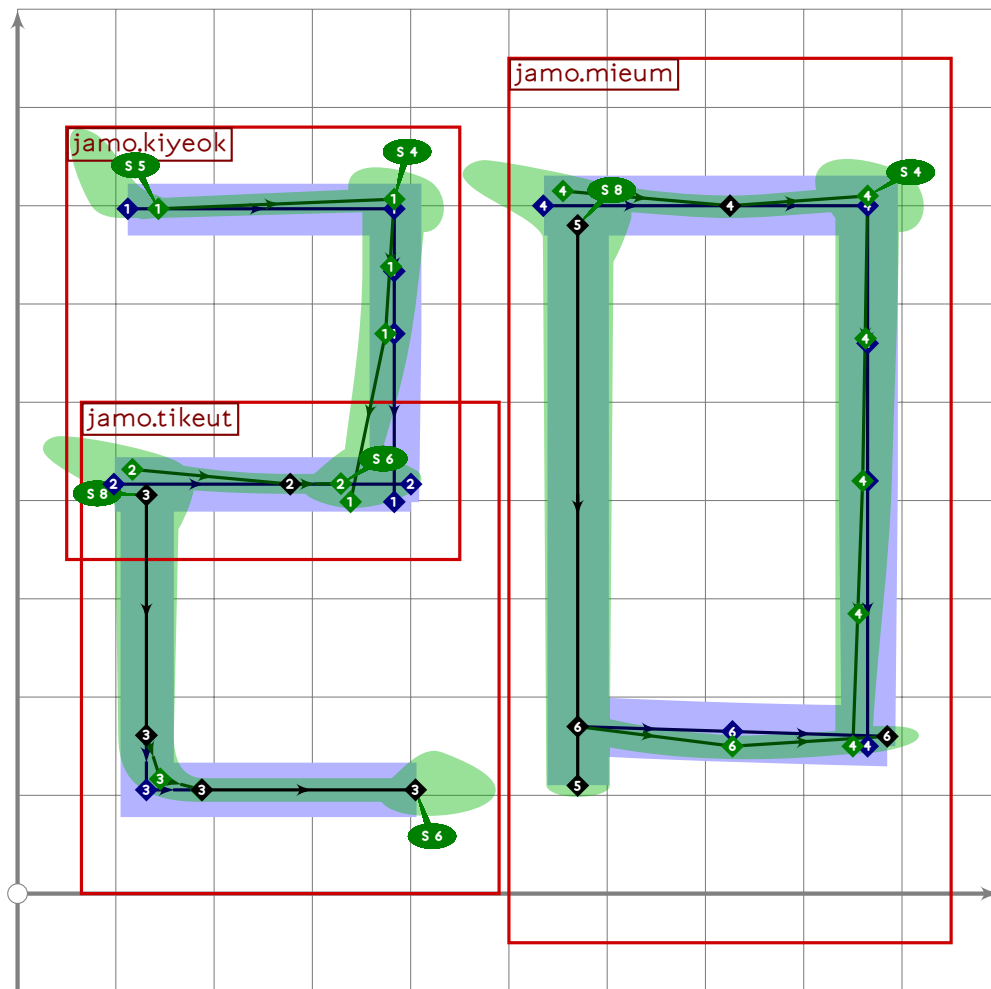
```



```

100 % hangul rieul-kiyeok
101 beginsuglyph("uni313A";58);
102   hangul.combine.lr(205,100)(whatever,identity,identity);
103   tsu_render;
104 endsuglyph;
105

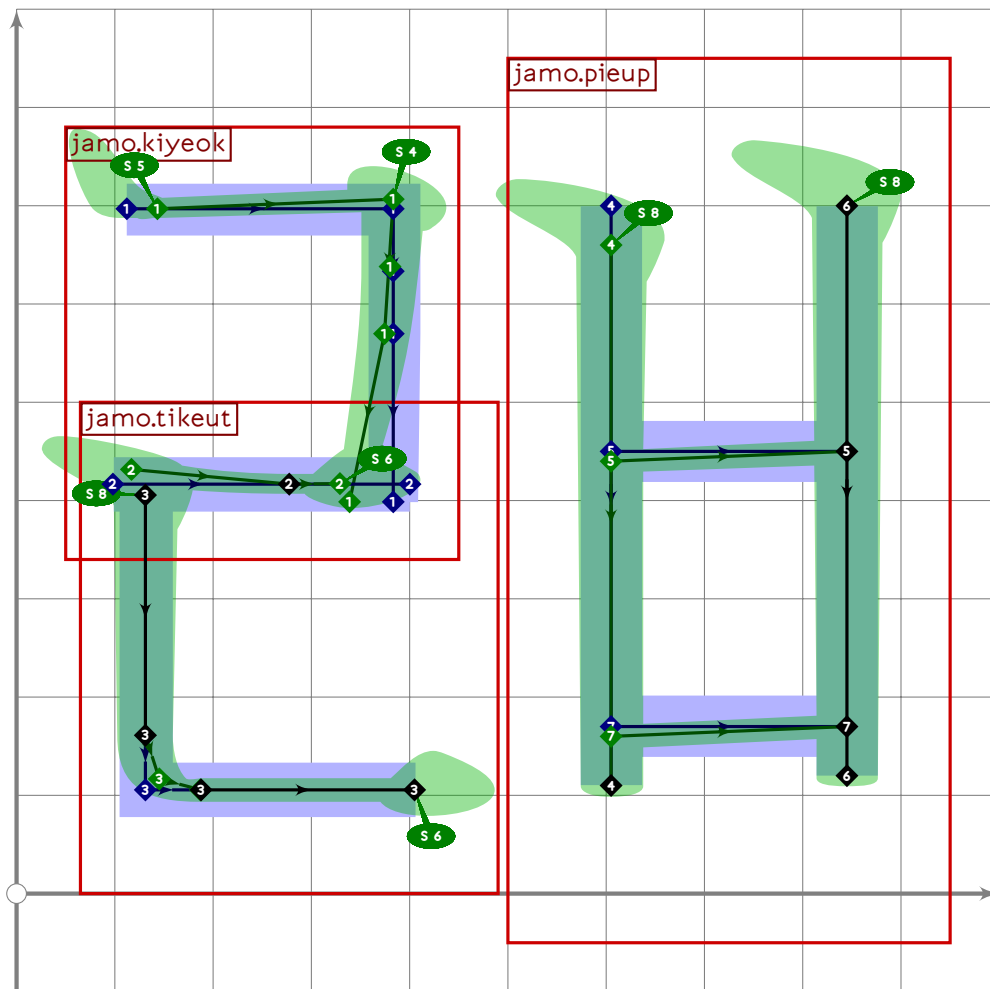
```



```

106 % hangul rieul-mieum
107 begintsuglyph("uni313B";59);
108 hangul.combine.lr(105,106)(whatever;identity,identity);
109 tsu_render;
110 endtsuglyph;
111

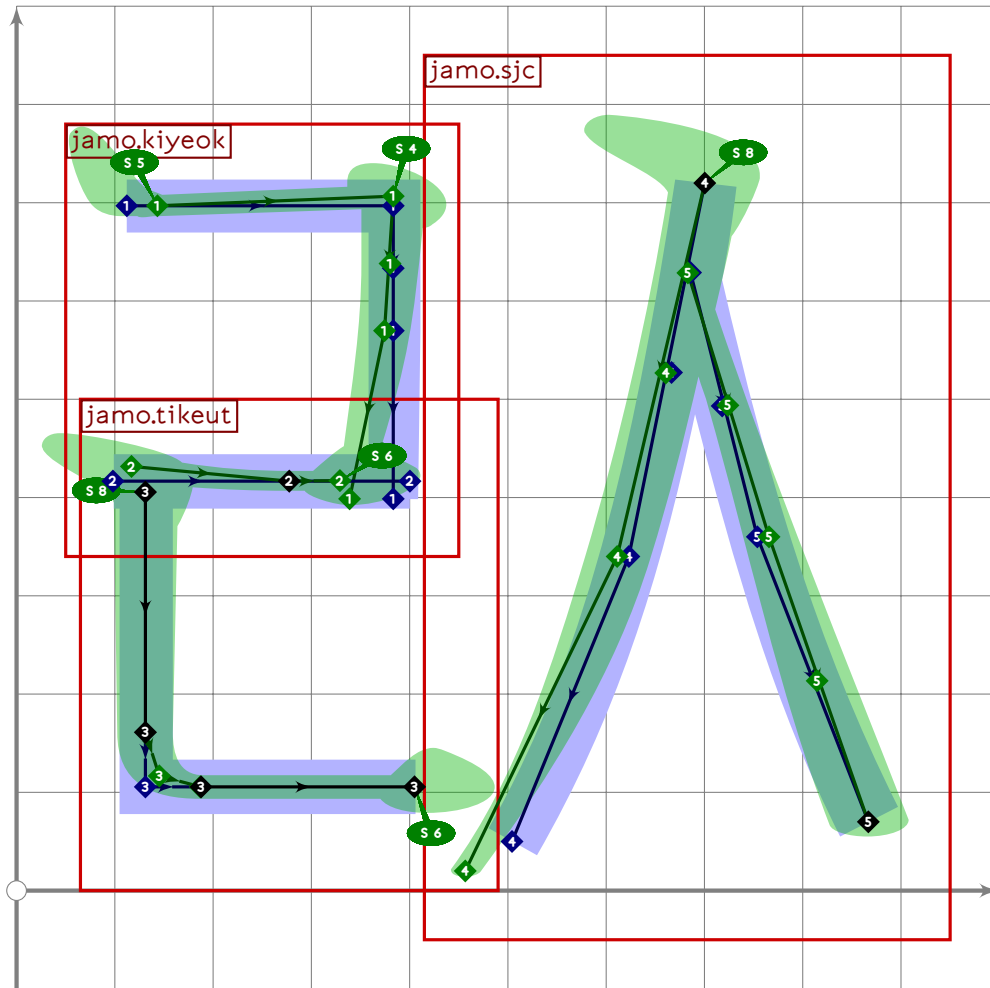
```



```

112 % hangul rieul-pieup
113 beginsuglyph("uni313C",60);
114 hangul.combine.lr(105,107)(whatever;identity,identity);
115 tsu_render;
116 endsuglyph;
117

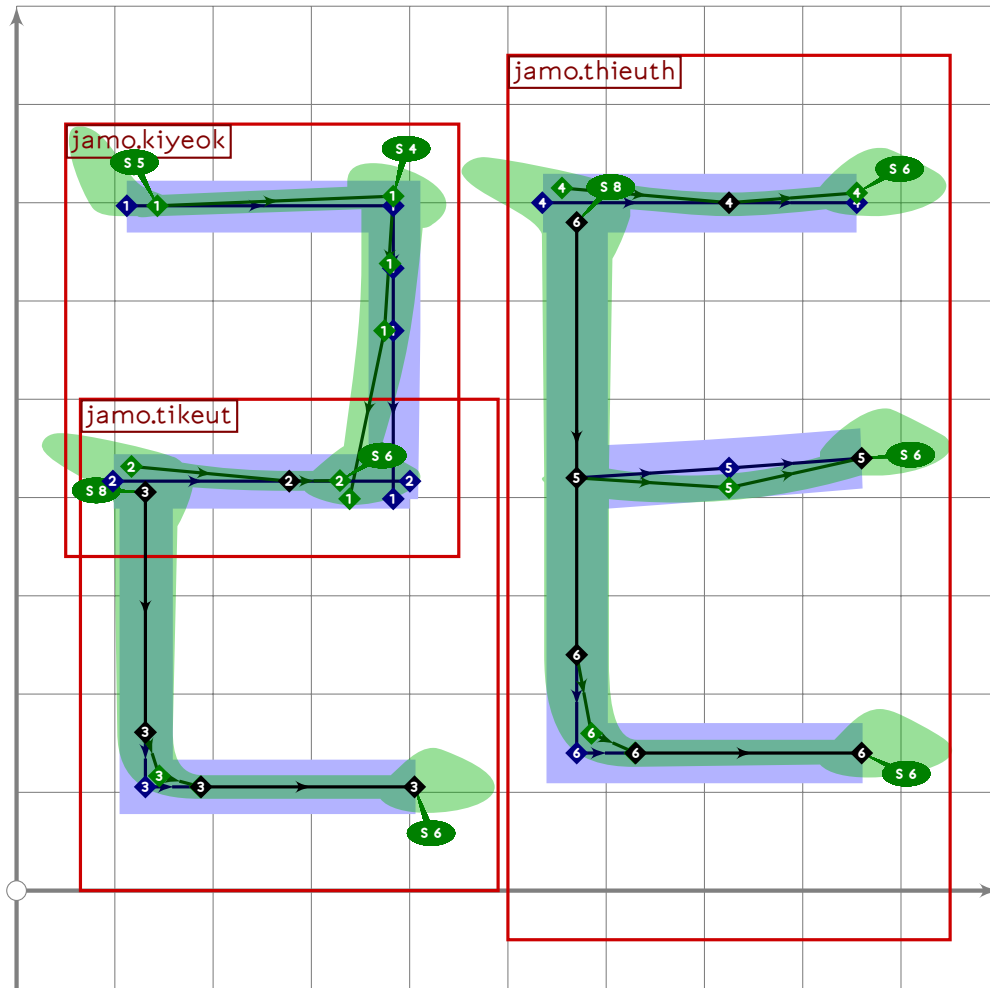
```



```

118 % hangul rieul-sios
119 beginsuglyph("uni313D",61);
120 hangul.combine.lr(105,109)(whatever;identity;identity);
121 tsu_render;
122 endsuglyph;
123

```

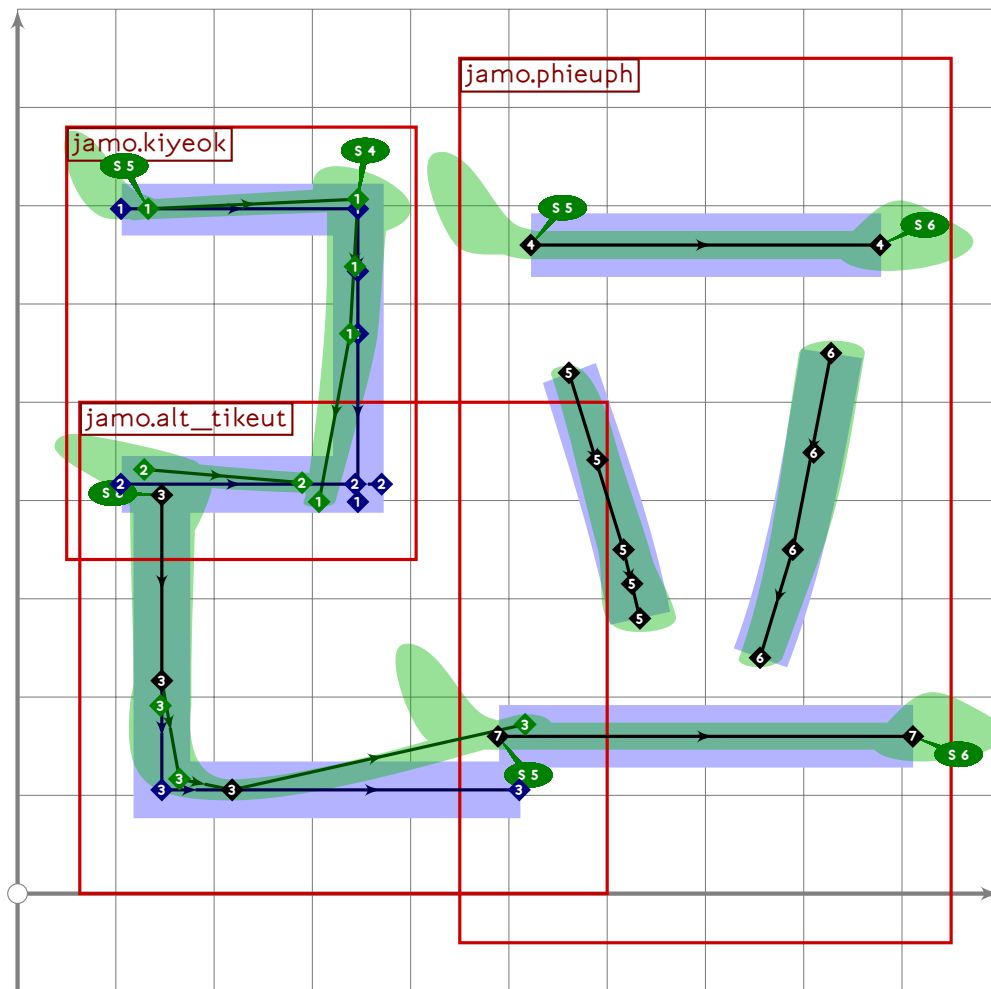



```

124 % hangul rieul-thieuth
125 beginsuglyph("uni313E",62);
126 hangul.combine.lr(105,116)(whatever,identity,identity);
127 tsu_render;
128 endsuglyph;
129

```

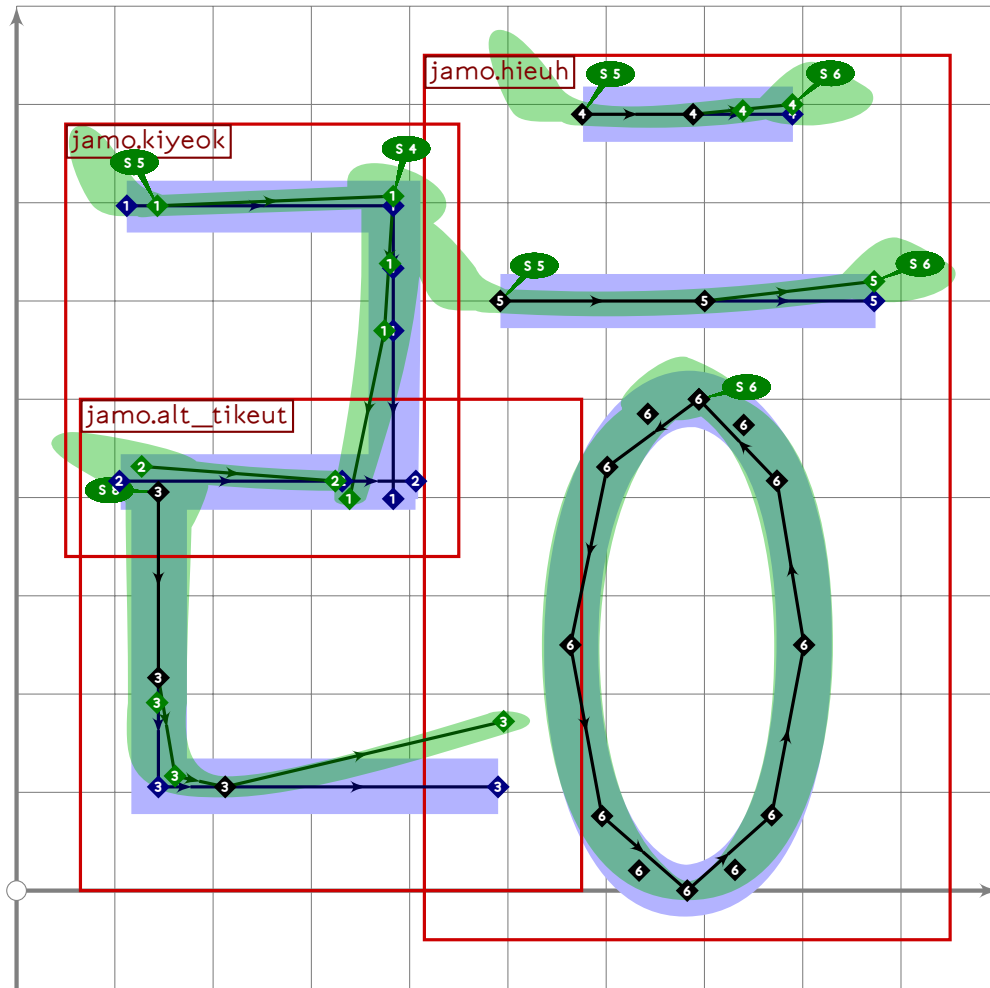
U+313F
mande.uni313F



```

130 % hangul rieul-phieuph
131 beginsuglyph("uni313F",63);
132 hangul.combine.lr(205,117)(whatever;identity,identity);
133 tsu_render;
134 endsuglyph;
135

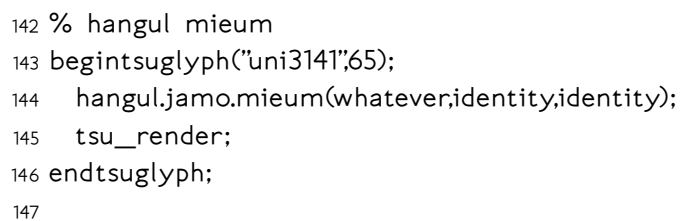
```

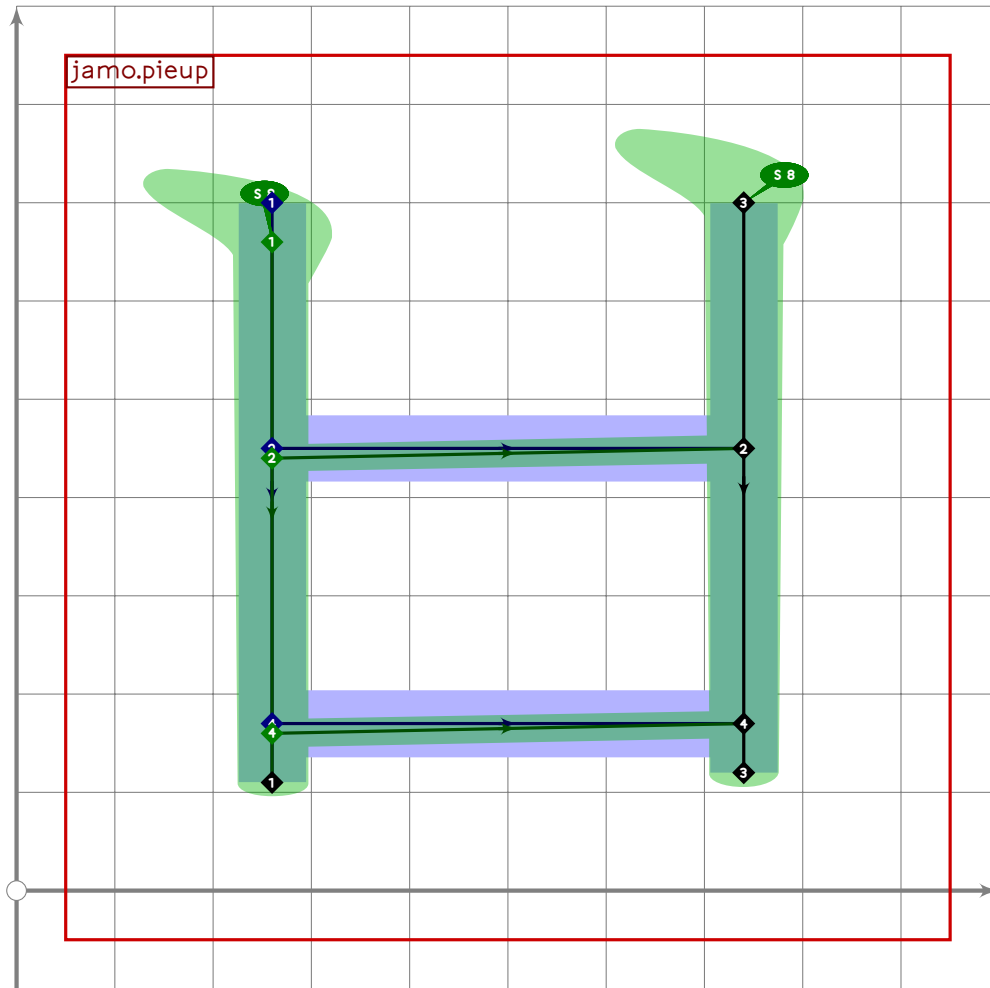


```

136 % hangul rieul-hieuh
137 beginsuglyph("uni3140",64);
138   hangul.combine.lr(205,118)(whatever;identity,identity);
139   tsu_render;
140 endsuglyph;
141

```

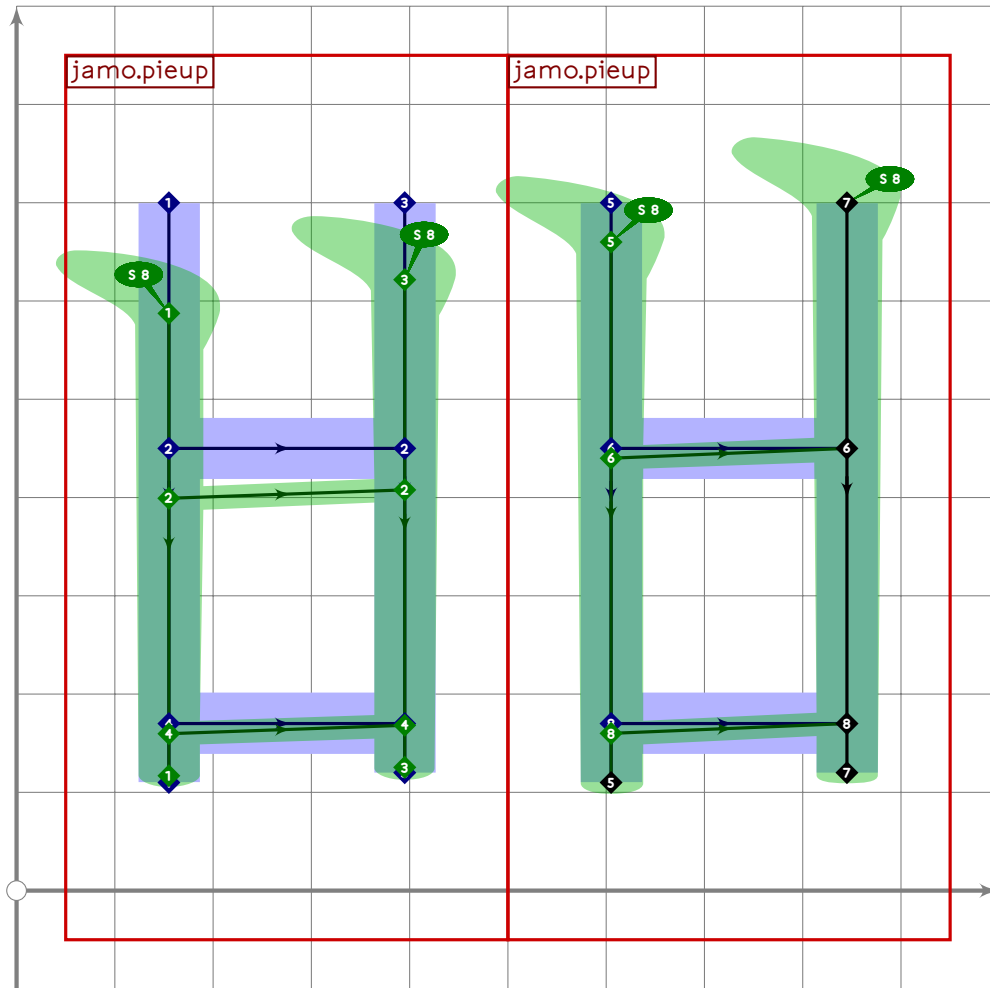




```

148 % hangul pieup
149 begintsuglyph("uni3142",66);
150   hangul.jamo.pieup(whatever,identity,identity);
151   tsu_render;
152 endsuglyph;
153

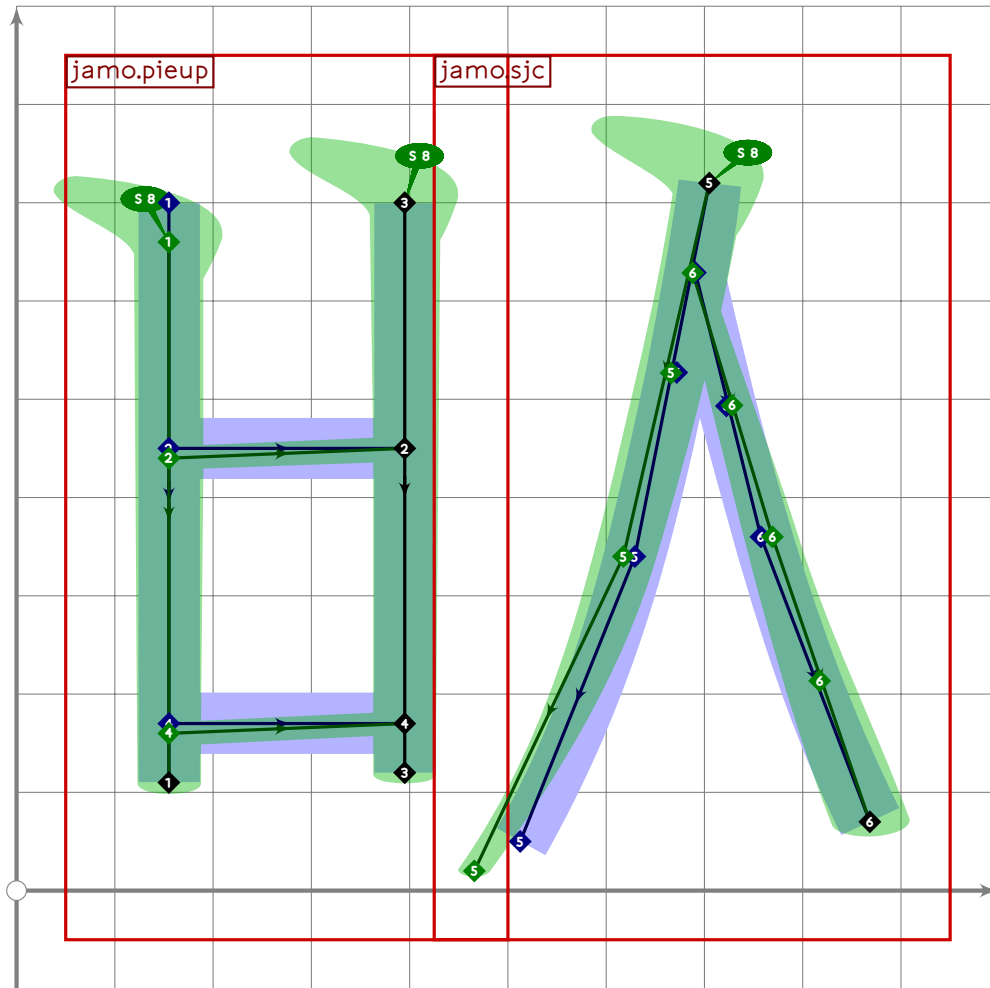
```



```

154 % hangul ssangpieup
155 beginsuglyph("uni3143";67);
156 hangul.combine.lr(207,107)(whatever;identity,identity);
157 tsu_render;
158 endtsuglyph;
159

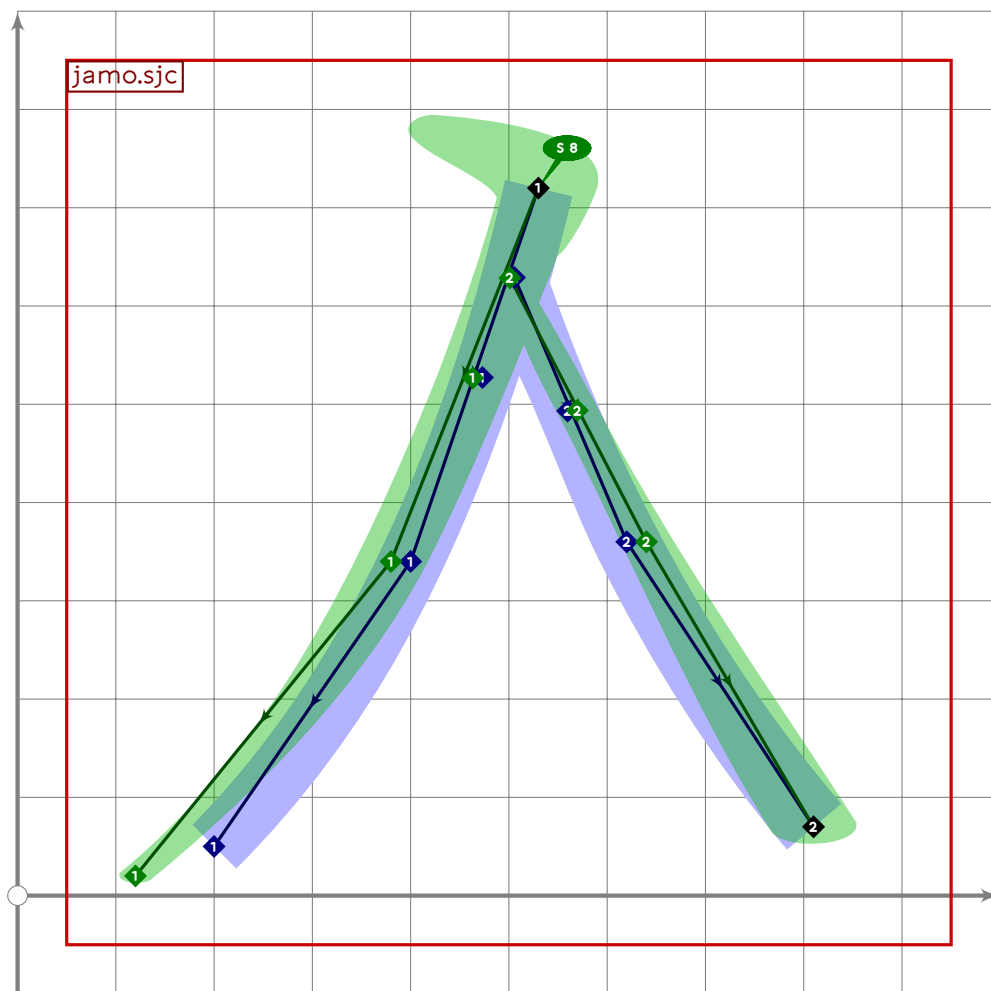
```



```

160 % hangul pieup-sios
161 begintsuglyph("uni3144",68);
162 hangul.combine.lr(107,109)(whatever,identity,identity);
163 tsu_render;
164 endtsuglyph;
165

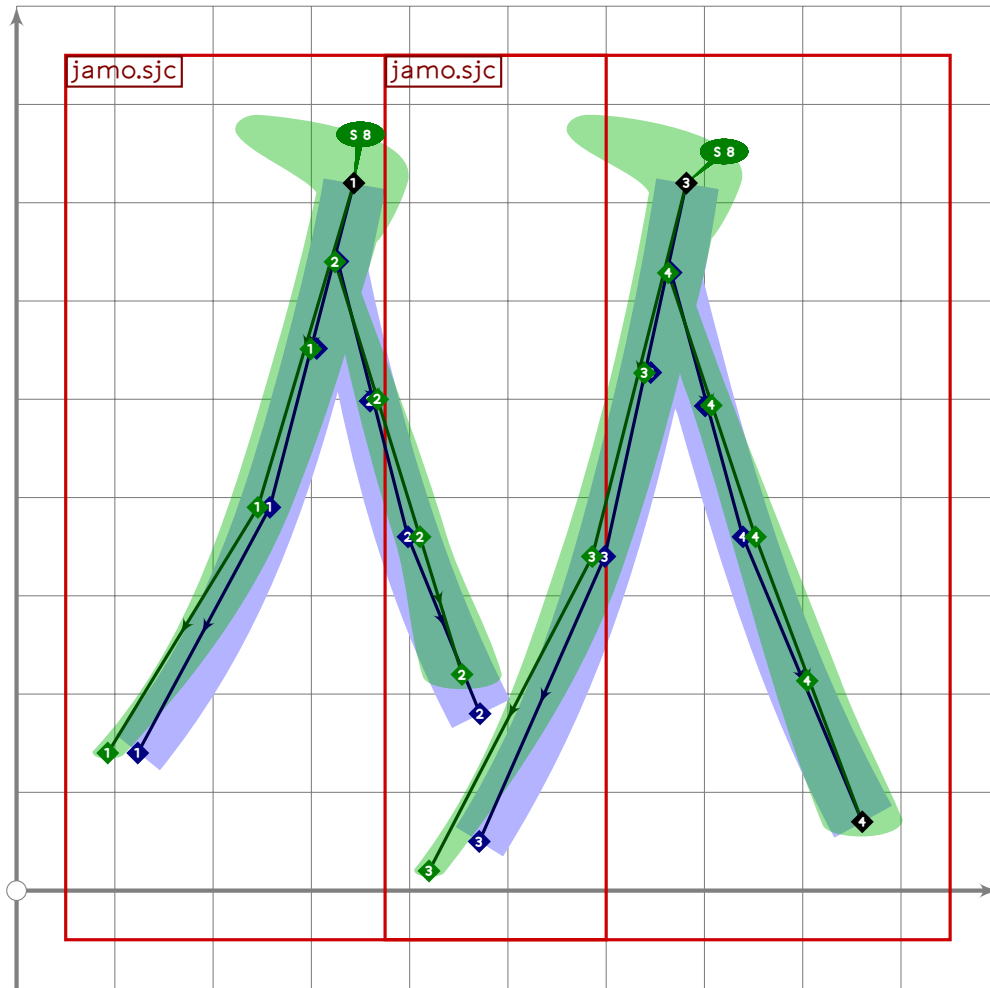
```



```

166 % hangul sios
167 begintsuglyph("uni3145";69);
168   hangul.jamo.sjc(0,0,false)(whatever;identity;identity);
169   tsu_render;
170 endsuglyph;
171

```

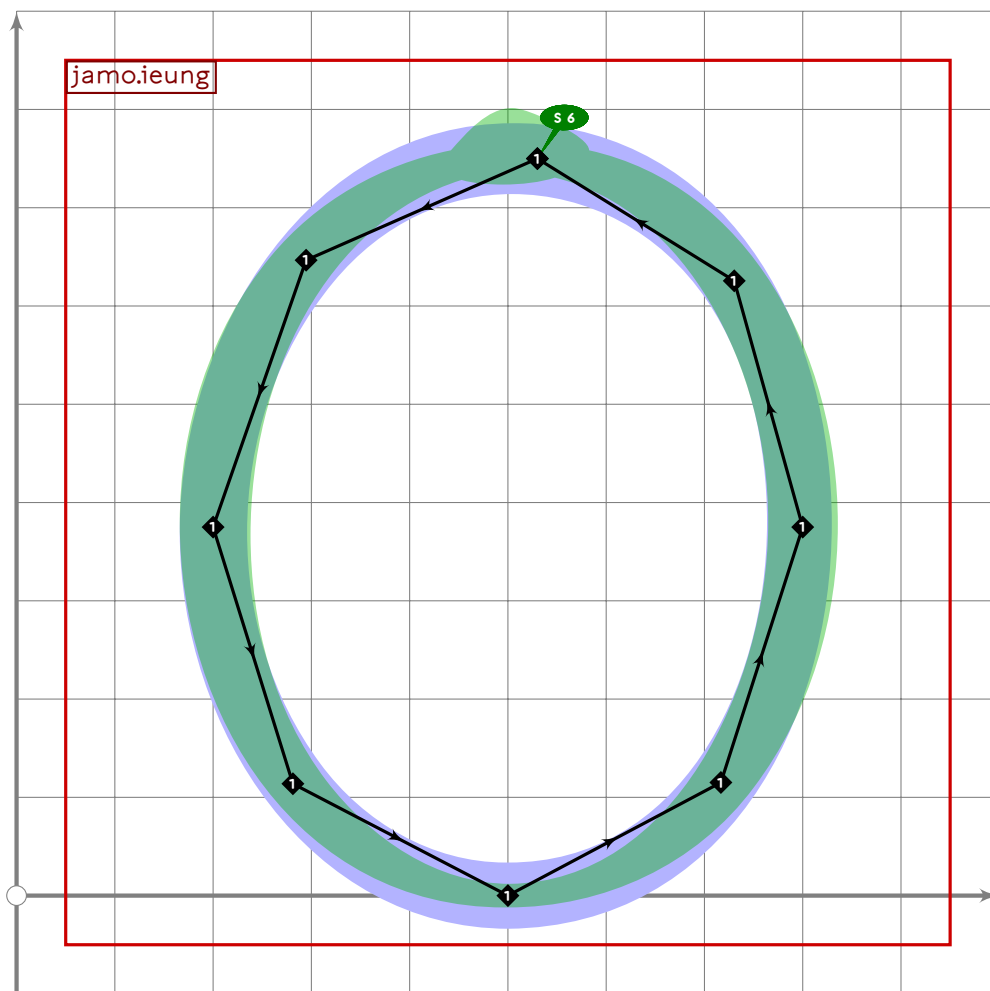



```

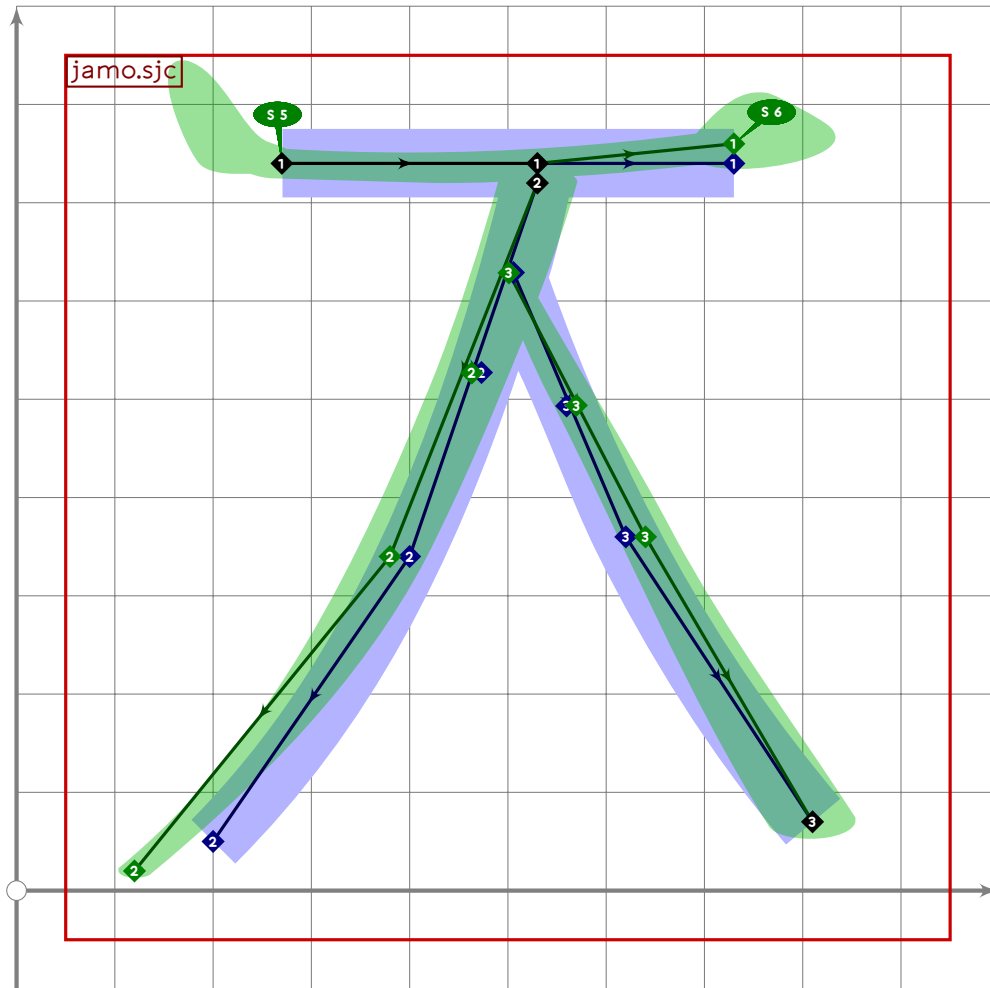
172 % hangul ssangsios
173 beginsuglyph("uni3146",70);
174   hangul.combine.lr(209,109)(whatever,identity,identity);
175   tsu_render;
176 endsuglyph;
177

```

U+3147
mande.uni3147



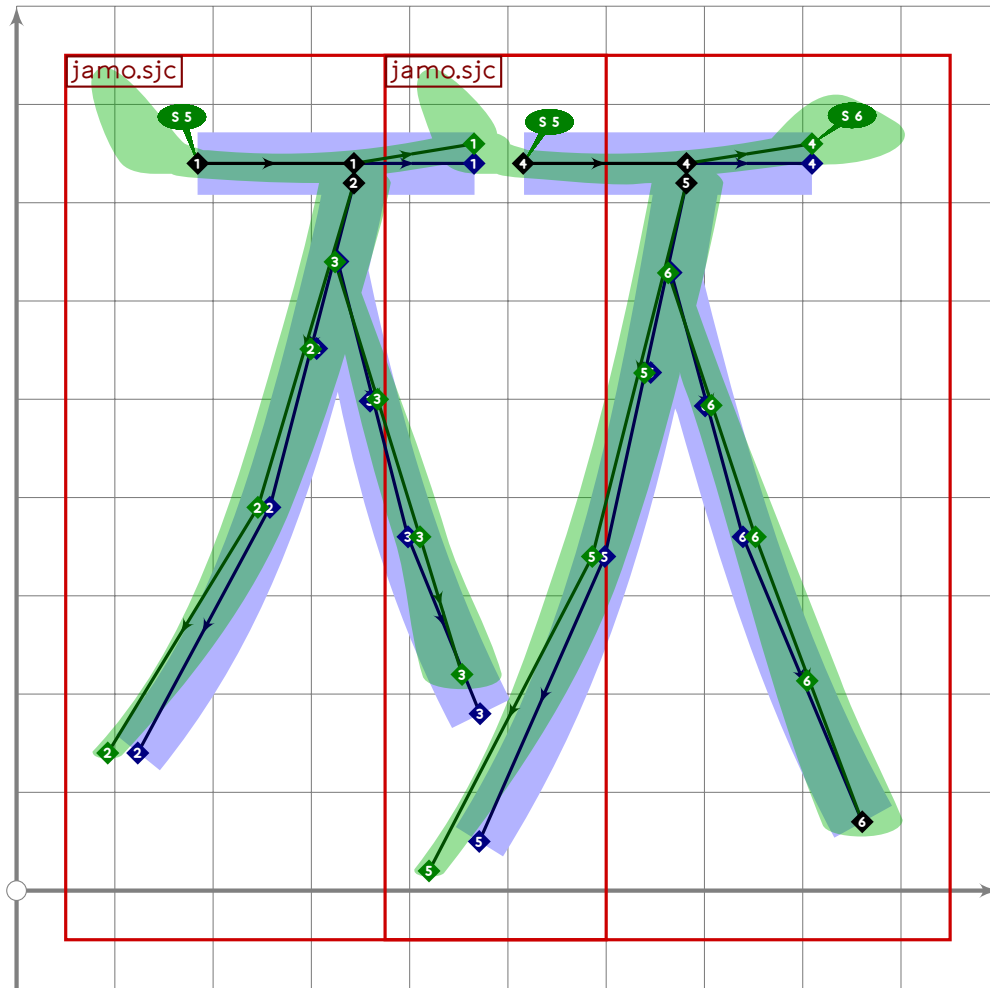
```
178 % hangul ieung
179 beginsuglyph("uni3147";71);
180 hangul.jamo.ieung(whatever;identity;identity);
181 tsu_render;
182 endsuglyph;
183
```



```

184 % hangul cieuc
185 begintsuglyph("uni3148";72);
186   hangul.jamo.sjc(1,0,false)(whatever;identity;identity);
187   tsu_render;
188 endtsuglyph;
189

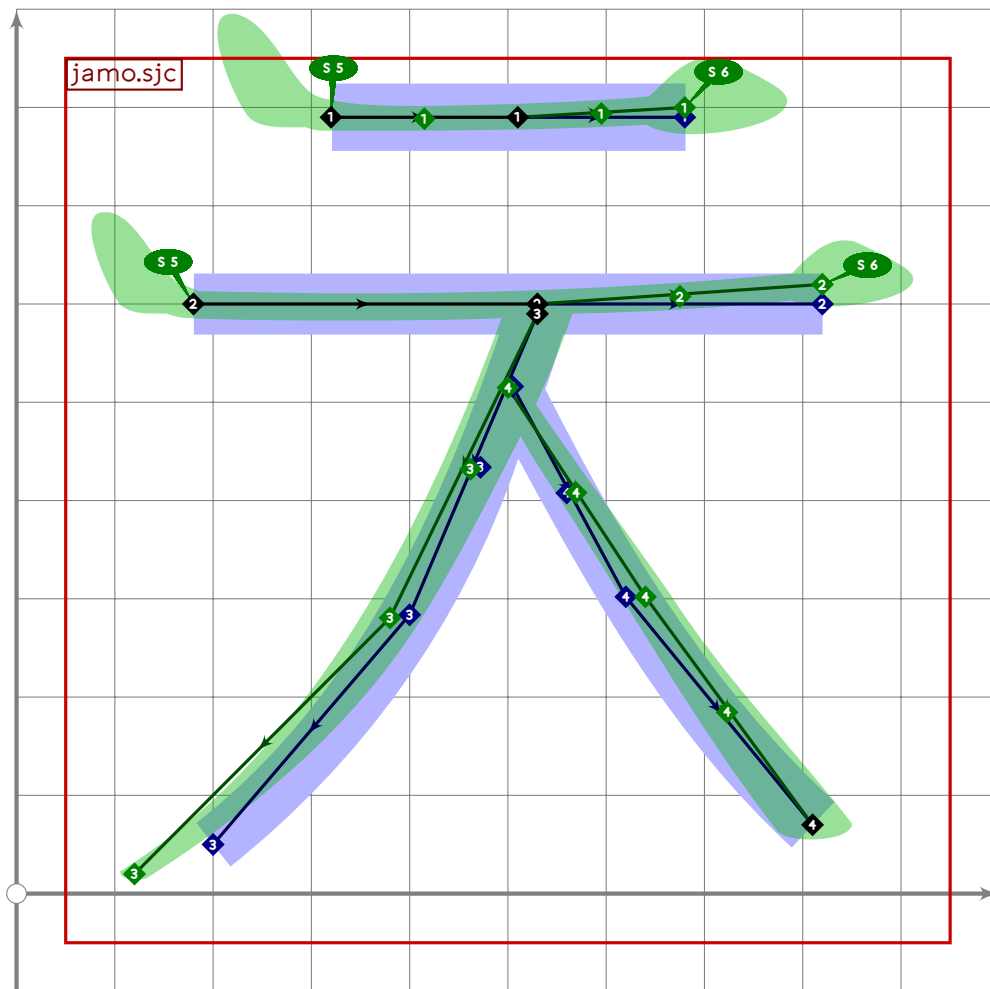
```



```

190 % hangul ssangcieuc
191 begintsuglyph("uni3149";73);
192 hangul.combine.lr(212,112)(whatever,identity,identity);
193 tsu_render;
194 endtsuglyph;
195

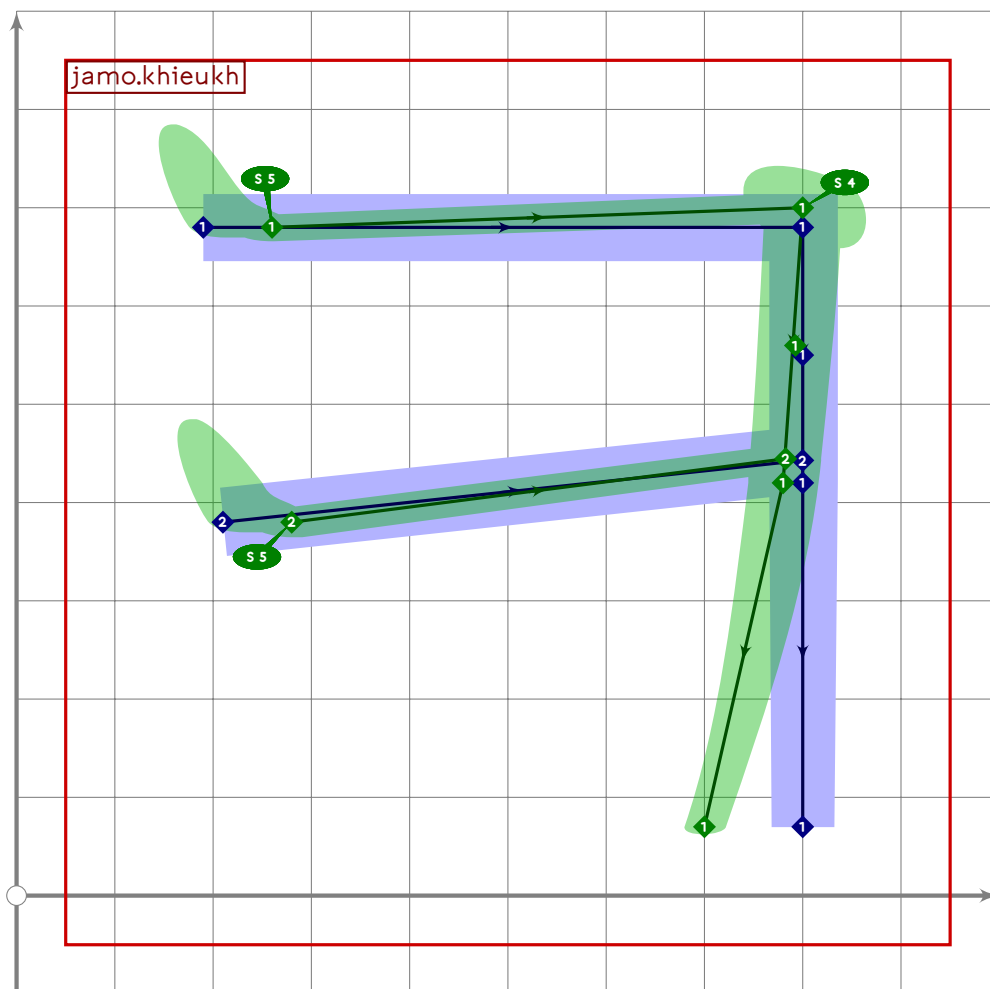
```



```

196 % hangul chieuch
197 begintsuglyph("uni314A",74);
198   hangul.jamo.sjc(2,0,false)(whatever,identity,identity);
199   tsu_render;
200 endtsuglyph;
201

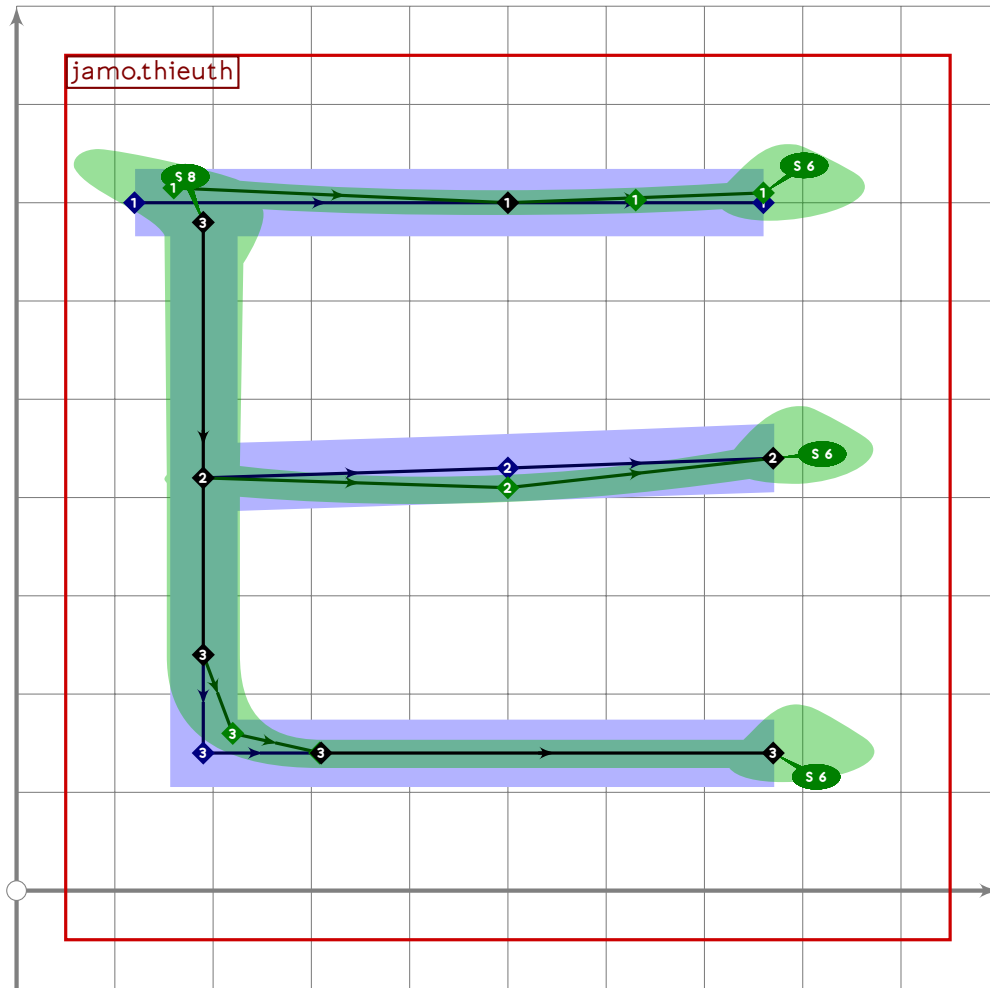
```



```

202 % hangul khieukh
203 begint Suglyph("uni314B";75);
204   hangul.jamo.khieukh(whatever;identity,identity);
205   tsu_render;
206 endtsuglyph;
207

```

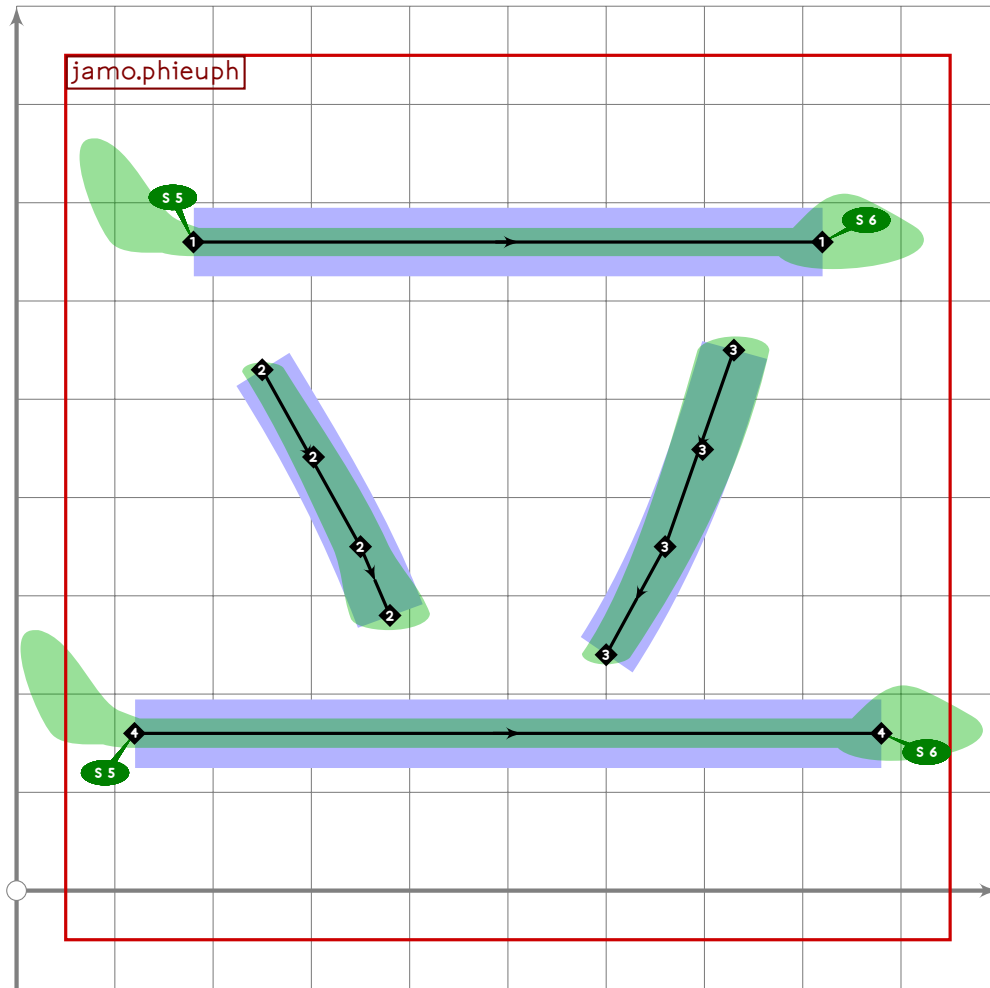


```

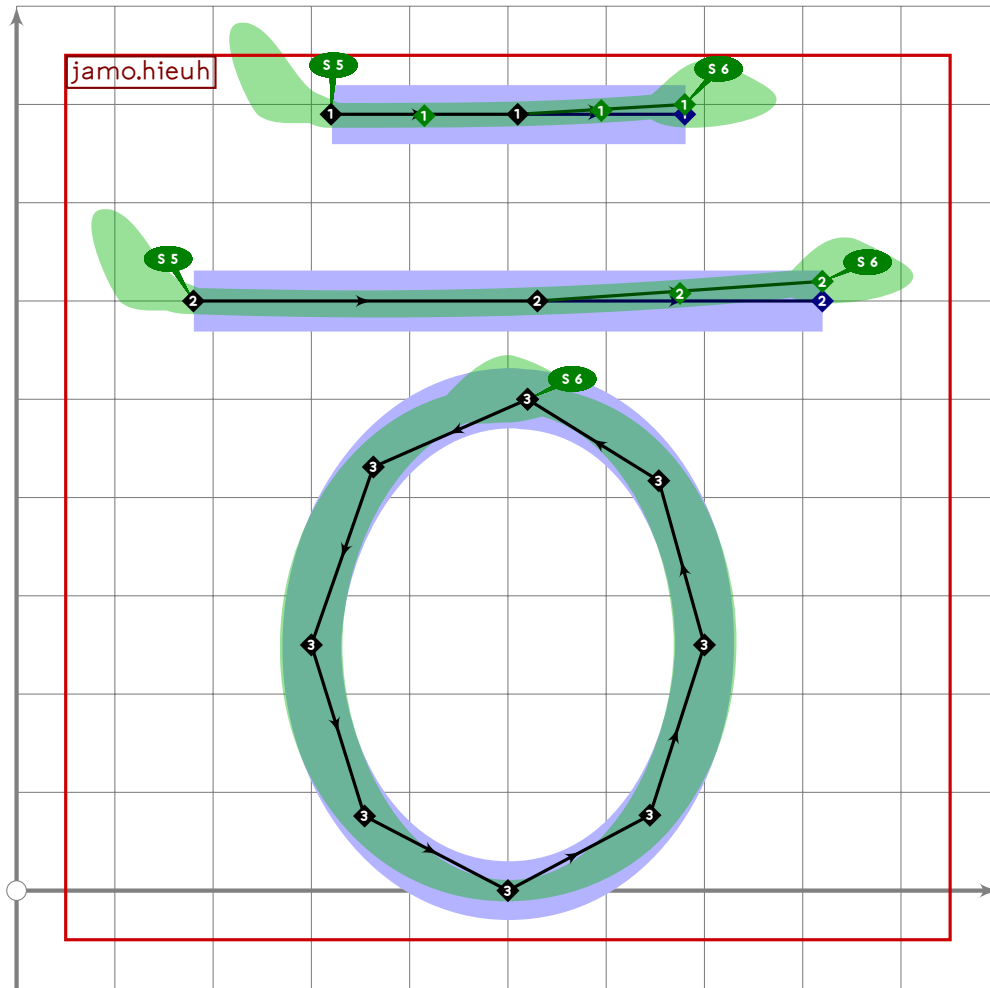
208 % hangul thieuth
209 beginsuglyph("uni314C";76);
210   hangul.jamo.thieuth(whatever;identity;identity);
211   tsu_render;
212 endsuglyph;
213

```

U+314D
mande.uni314D



```
214 % hangul phieuph
215 begintsuglyph("uni314D",77);
216   hangul.jamo.phieuph(whatever,identity,identity);
217   tsu_render;
218 endtsuglyph;
219
```

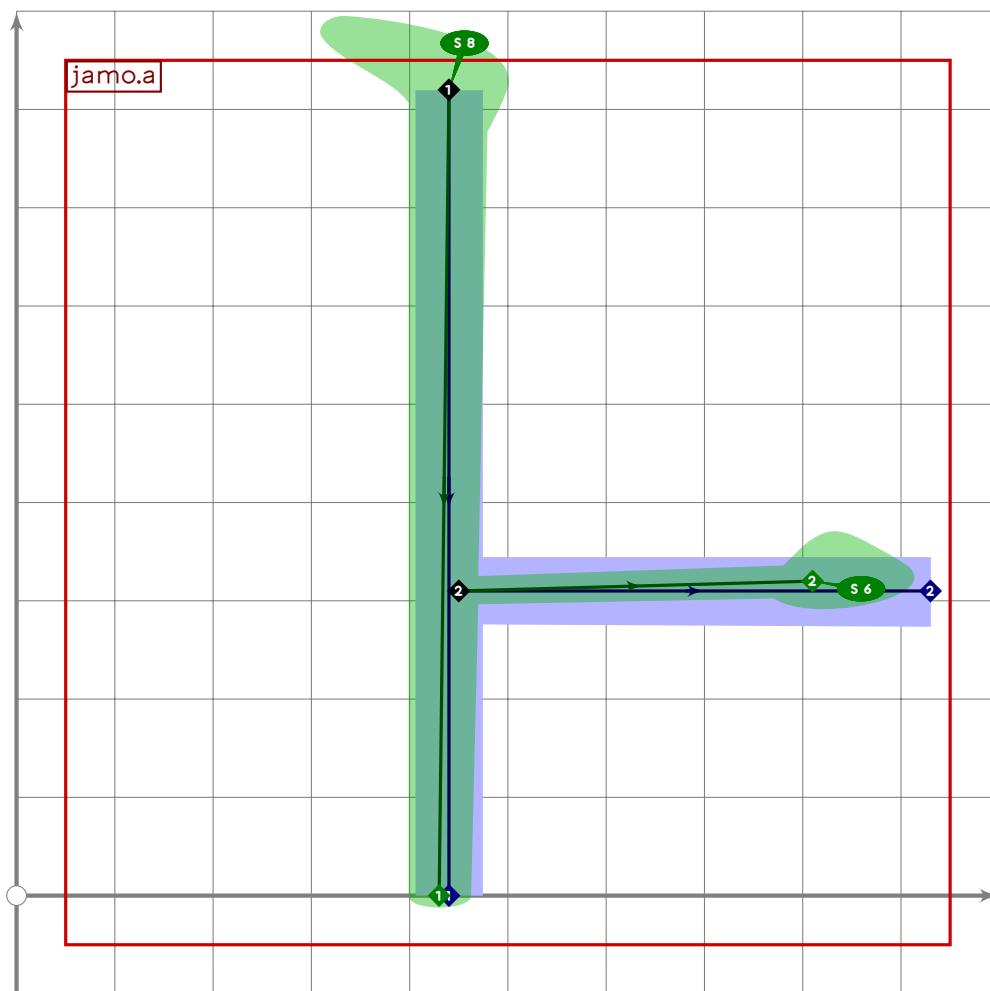



```

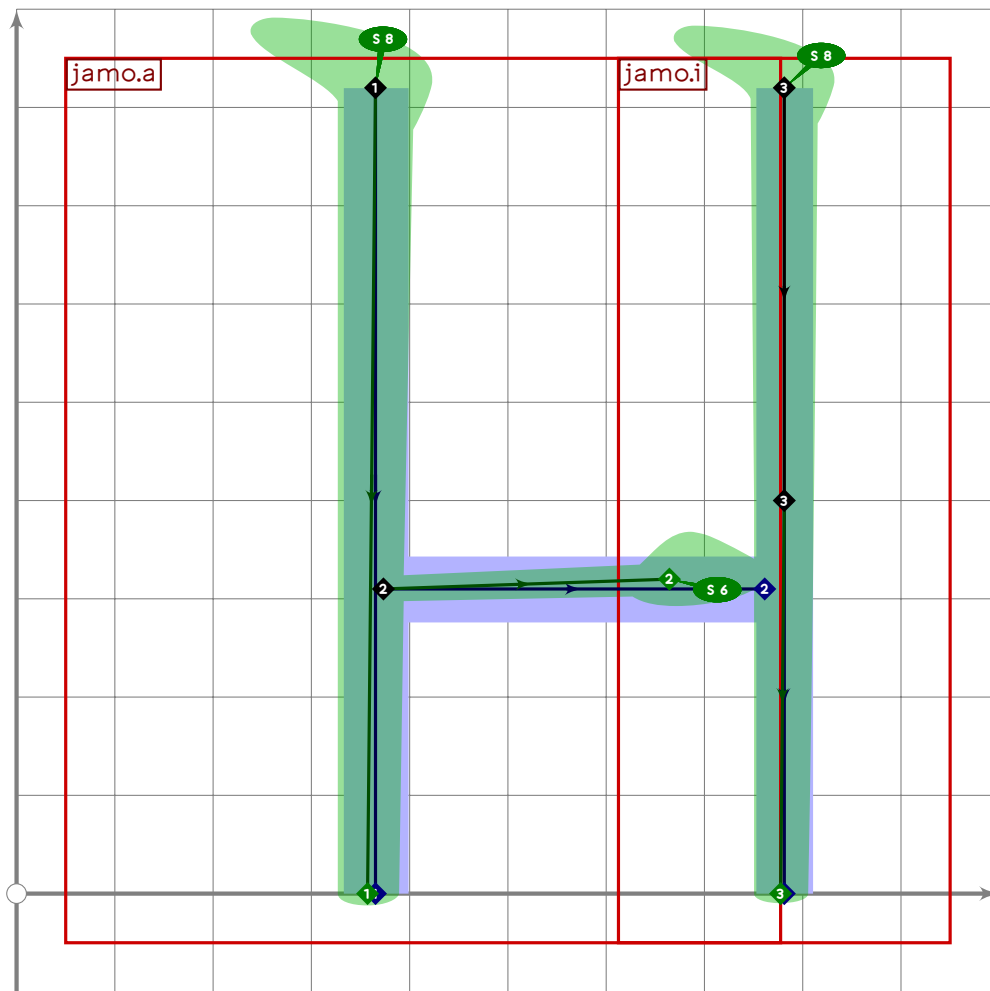
220 % hangul hieuh
221 begint Suglyph("uni314E",78);
222   hangul.jamo.hieuh(whatever,identity,identity);
223   tsu_render;
224 endtsuglyph;
225

```

U+314F
mande.uni314F



```
226 % hangul a
227 beginsuglyph("uni314F",79);
228   hangul.jamo.a(whatever;identity,identity);
229   tsu_render;
230 endsuglyph;
231
```

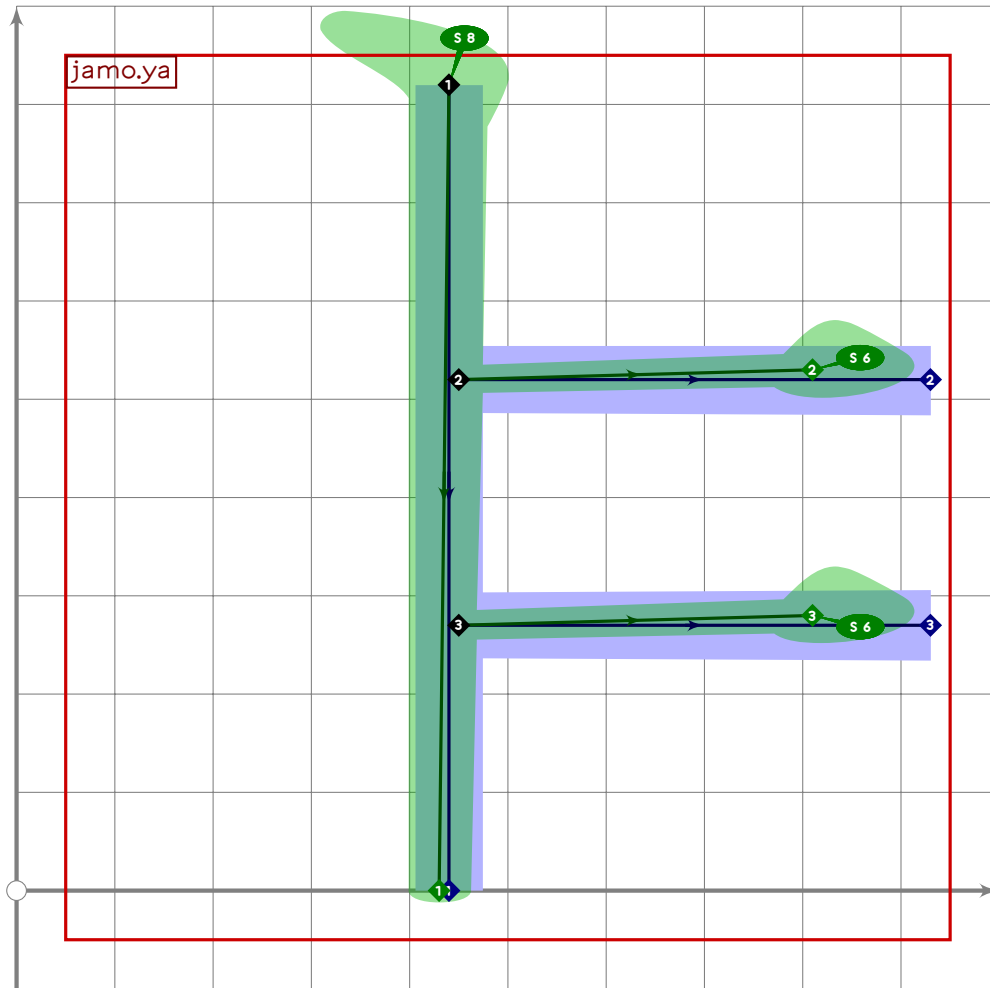


```

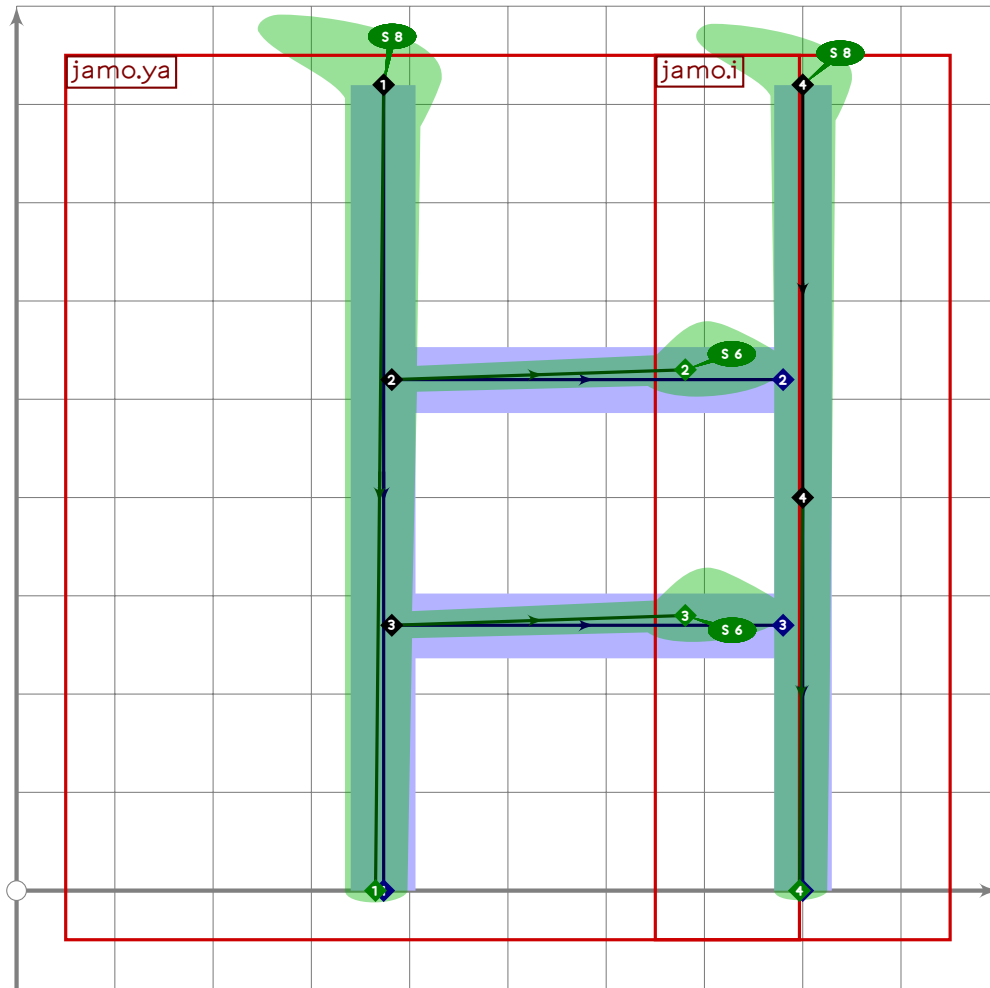
232 % hangul ae
233 begintsuglyph("uni3150";80);
234   hangul.combine.lr(300,320)(whatever;identity,identity);
235   tsu_render;
236 endtsuglyph;
237

```

U+3151
mande.uni3151



```
238 % hangul ya
239 begintsuglyph("uni3151";81);
240   hangul.jamo.ya(whatever;identity,identity);
241   tsu_render;
242 endtsuglyph;
243
```

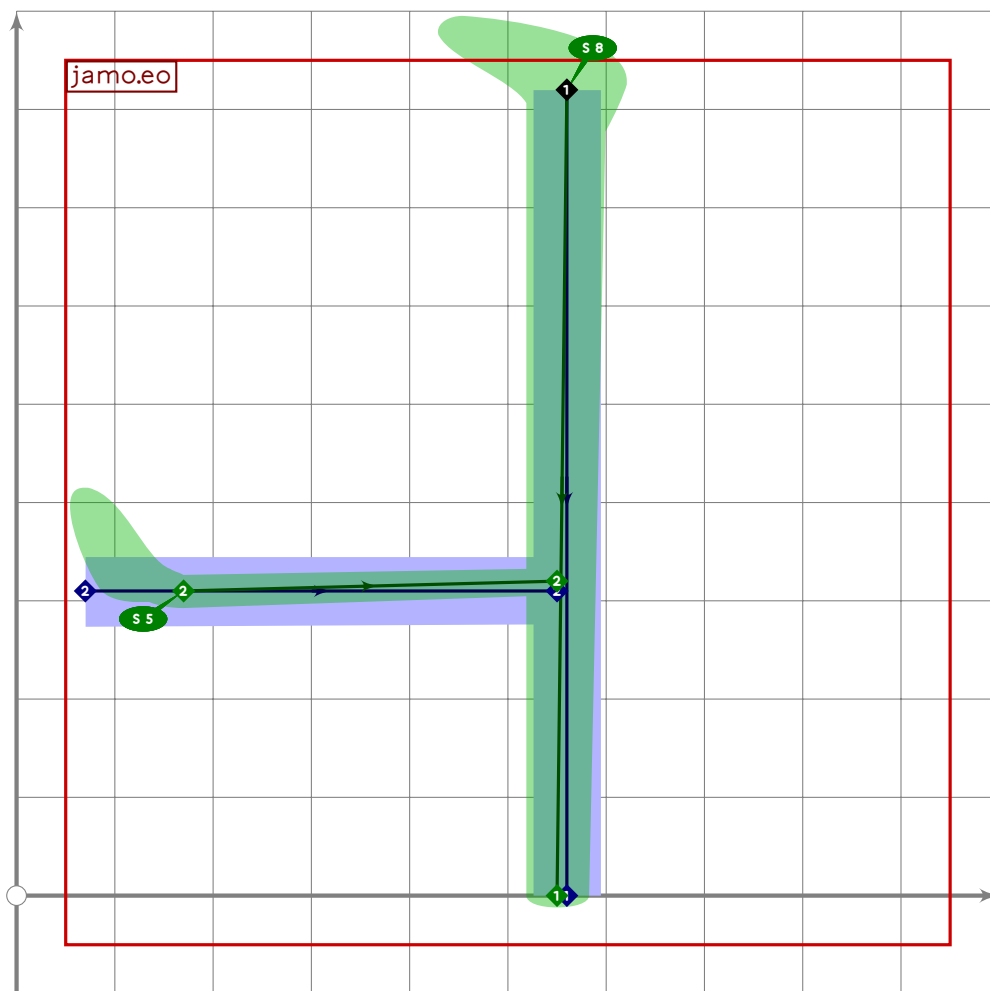


```

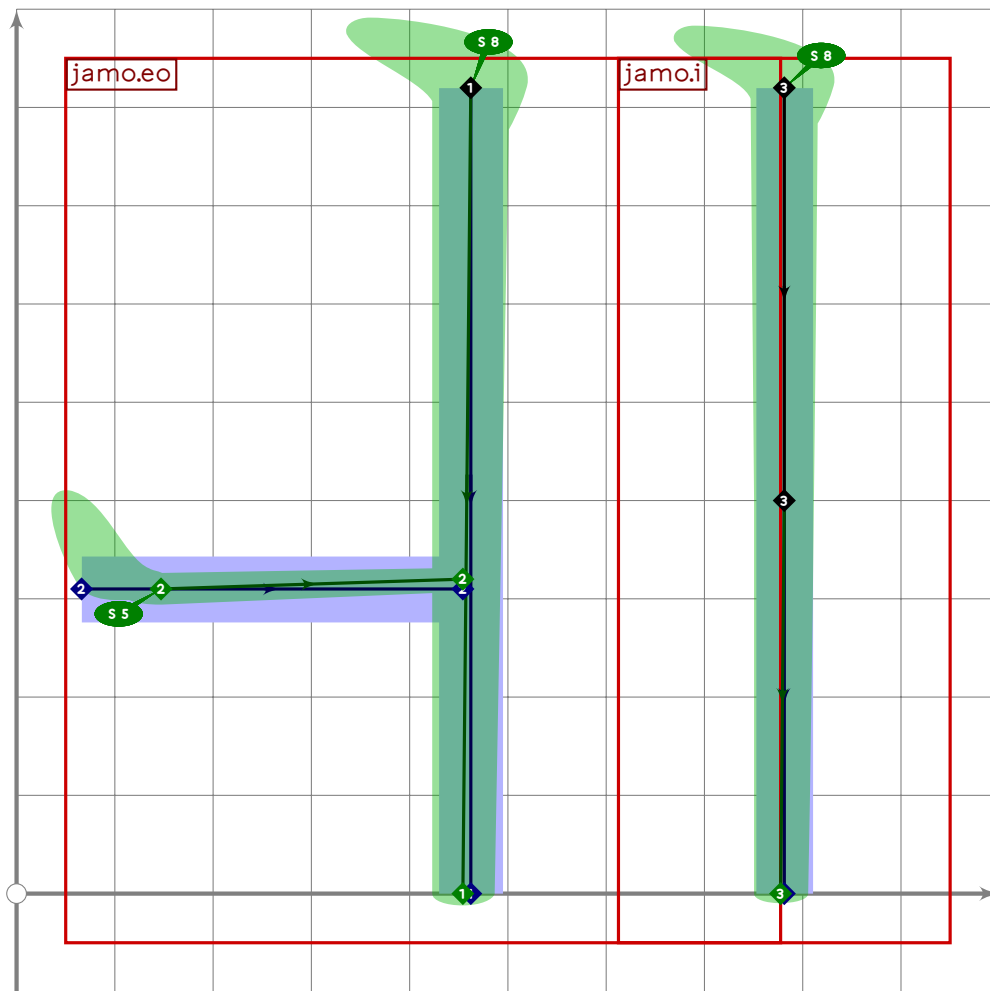
244 % hangul yae
245 begintsuglyph("uni3152";82);
246   hangul.combine.lr(302,320)(whatever;identity,identity);
247   tsu_render;
248 endtsuglyph;
249

```

U+3153
mande.uni3153



```
250 % hangul eo
251 begint Suglyph("uni3153";83);
252   hangul.jamo.eo(whatever;identity,identity);
253   tsu_render;
254 endtsuglyph;
255
```

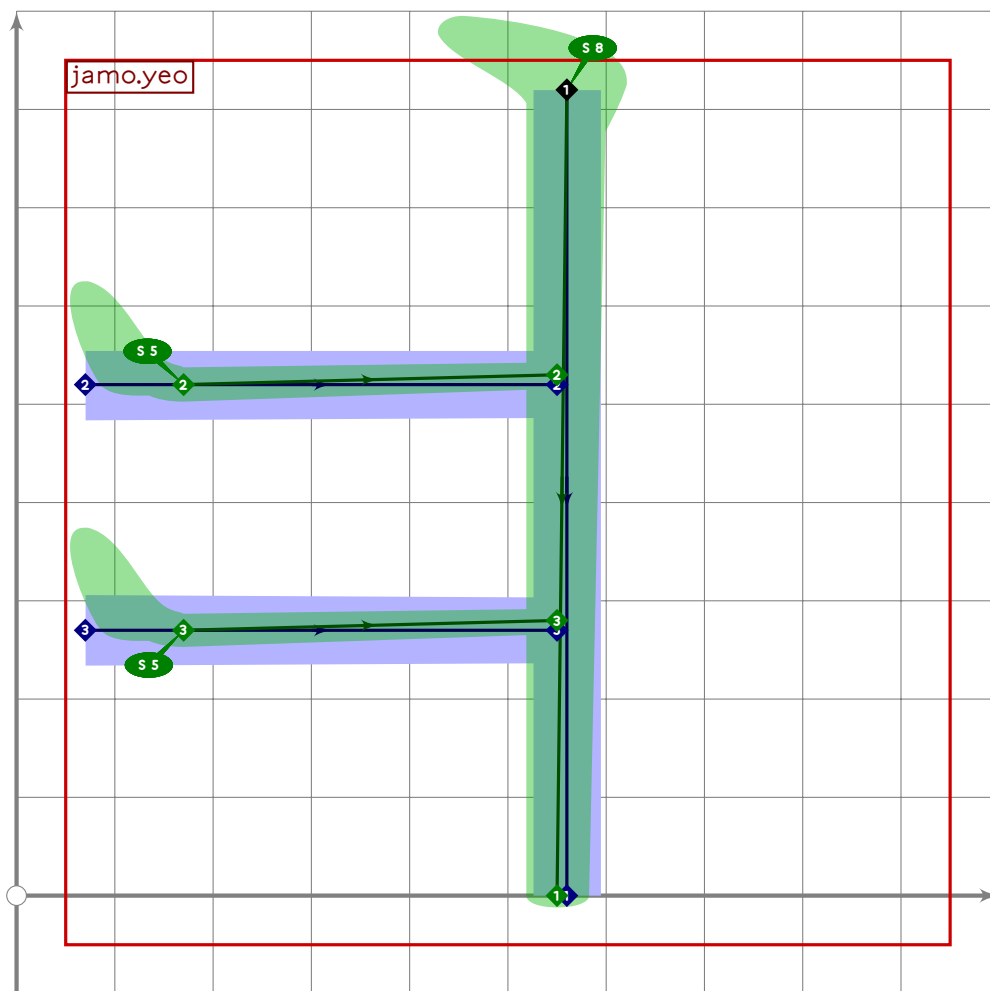


```

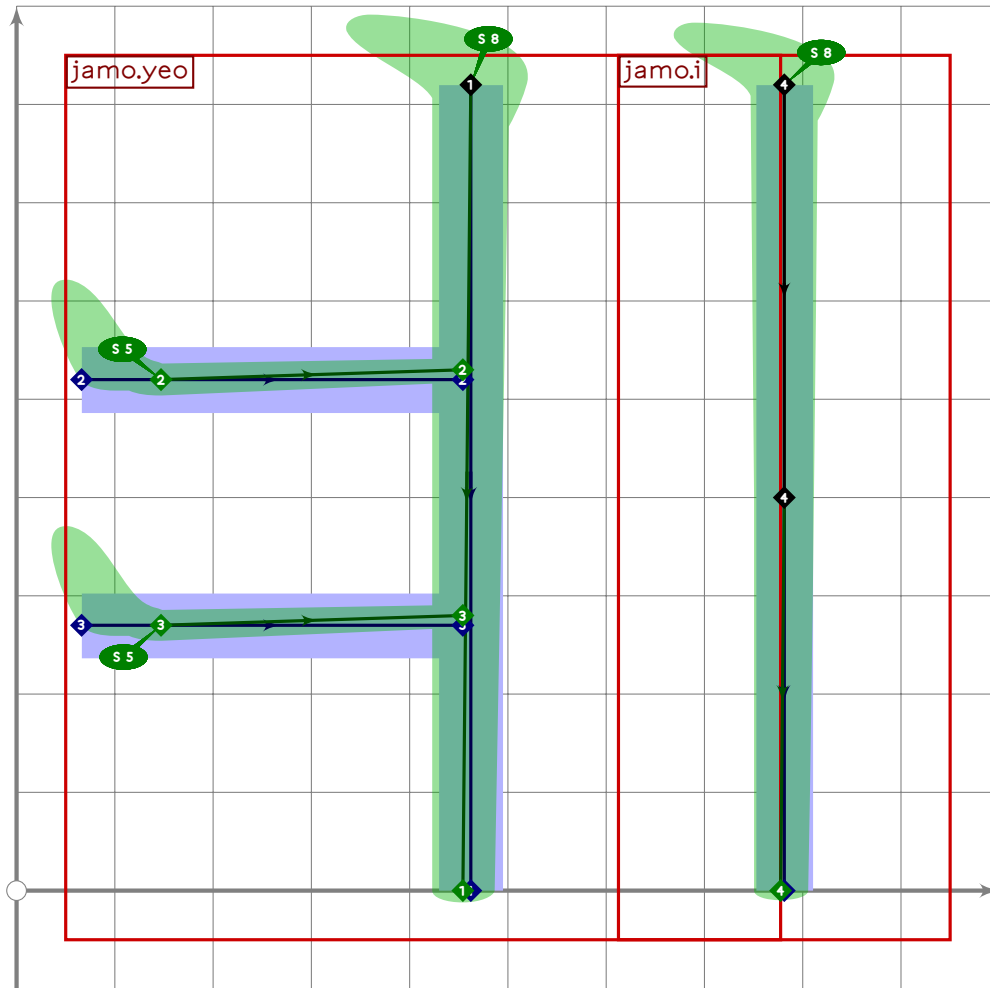
256 % hangul e
257 begintsuglyph("uni3154";84);
258   hangul.combine.lr(304,320)(whatever;identity,identity);
259   tsu_render;
260 endtsuglyph;
261

```

U+3155
mande.uni3155



```
262 % hangul yeo
263 beginsuglyph("uni3155";85);
264   hangul.jamo.yeo(whatever;identity,identity);
265   tsu_render;
266 endsuglyph;
267
```

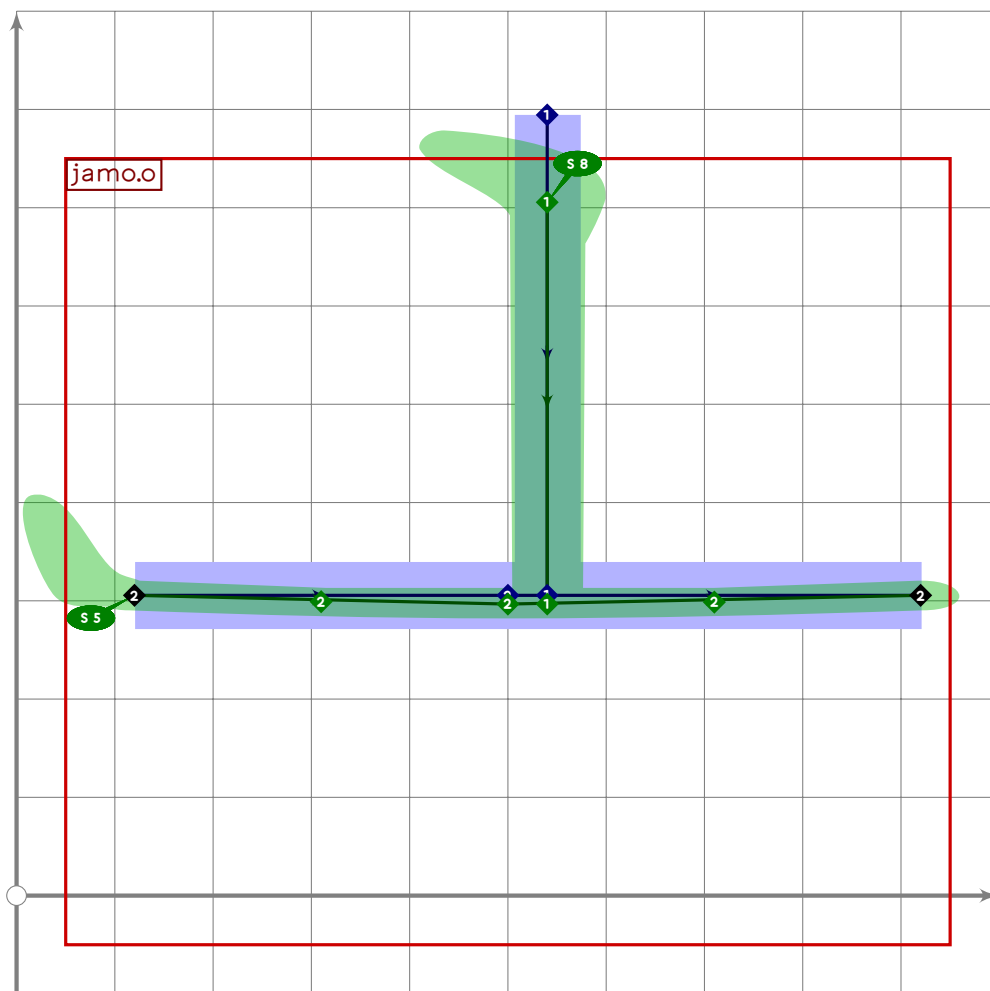



```

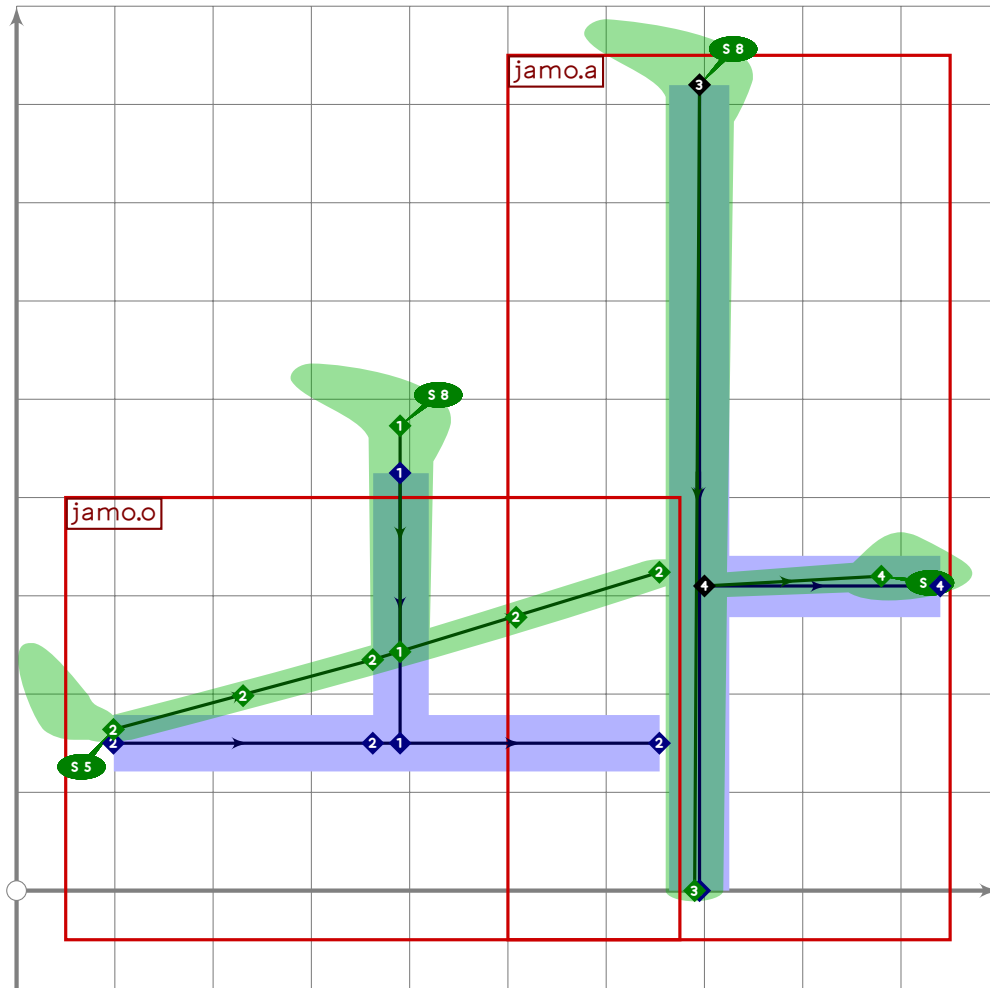
268 % hangul ye
269 begintsuglyph("uni3156";86);
270   hangul.combine.lr(306,320)(whatever;identity,identity);
271   tsu_render;
272 endtsuglyph;
273

```

U+3157
mande.uni3157



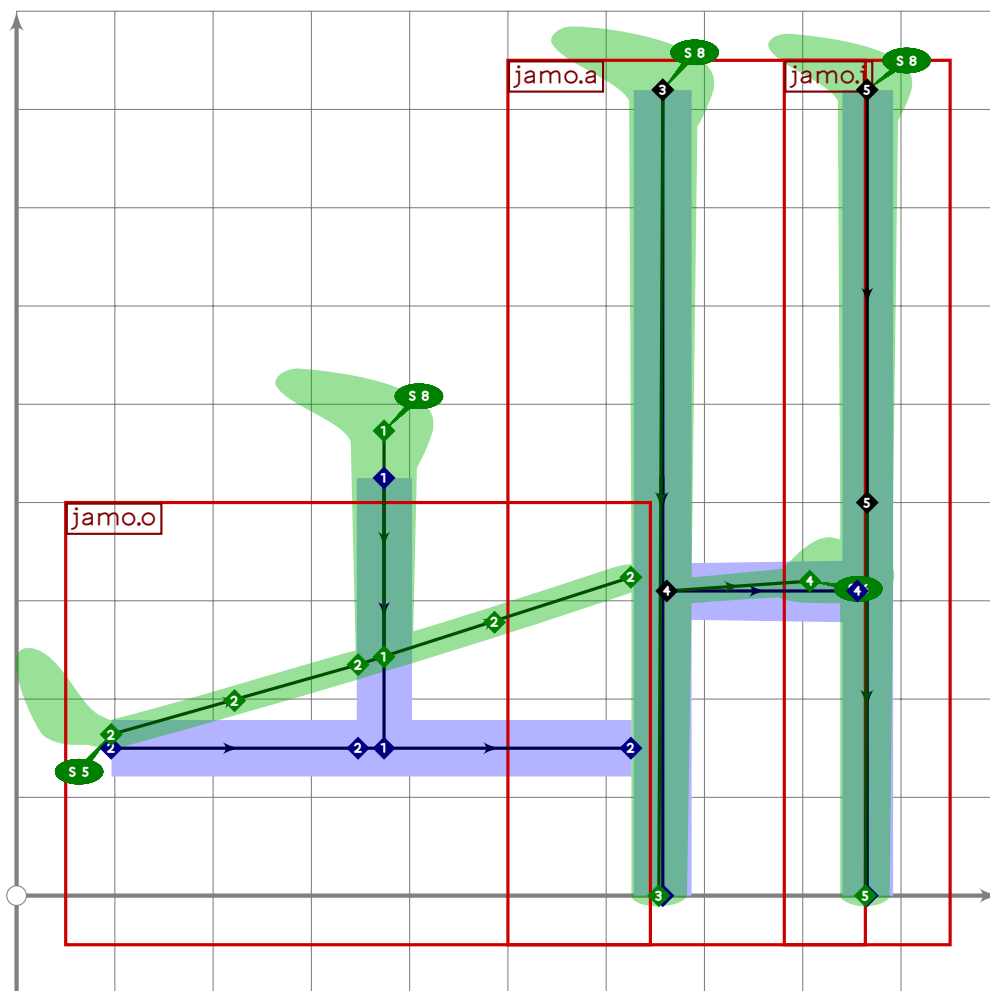
```
274 % hangul o
275 begintsuglyph("uni3157";87);
276   hangul.jamo.o(whatever;identity,identity);
277   tsu_render;
278 endsuglyph;
279
```



```

280 % hangul wa
281 begintsuglyph("uni3158";88);
282   hangul.combine.lr(308,300)(309,hxf((500,400),(950,-50)),identity);
283   tsu_render;
284 endtsuglyph;
285

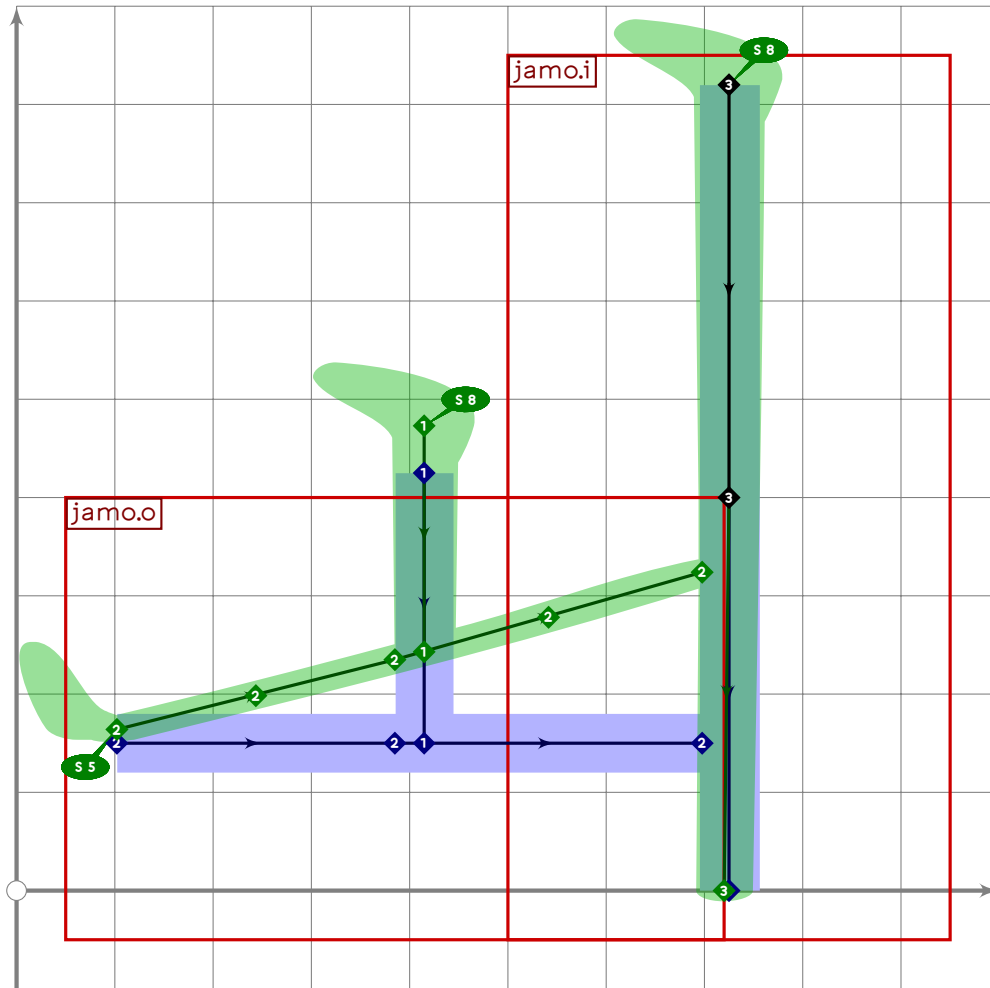
```



```

286 % hangul wae
287 begintsuglyph("uni3159";89);
288   hangul.combine.lr(308,301)(310,hxf((500,400),(950,-50)),identity);
289   tsu_render;
290 endtsuglyph;
291

```

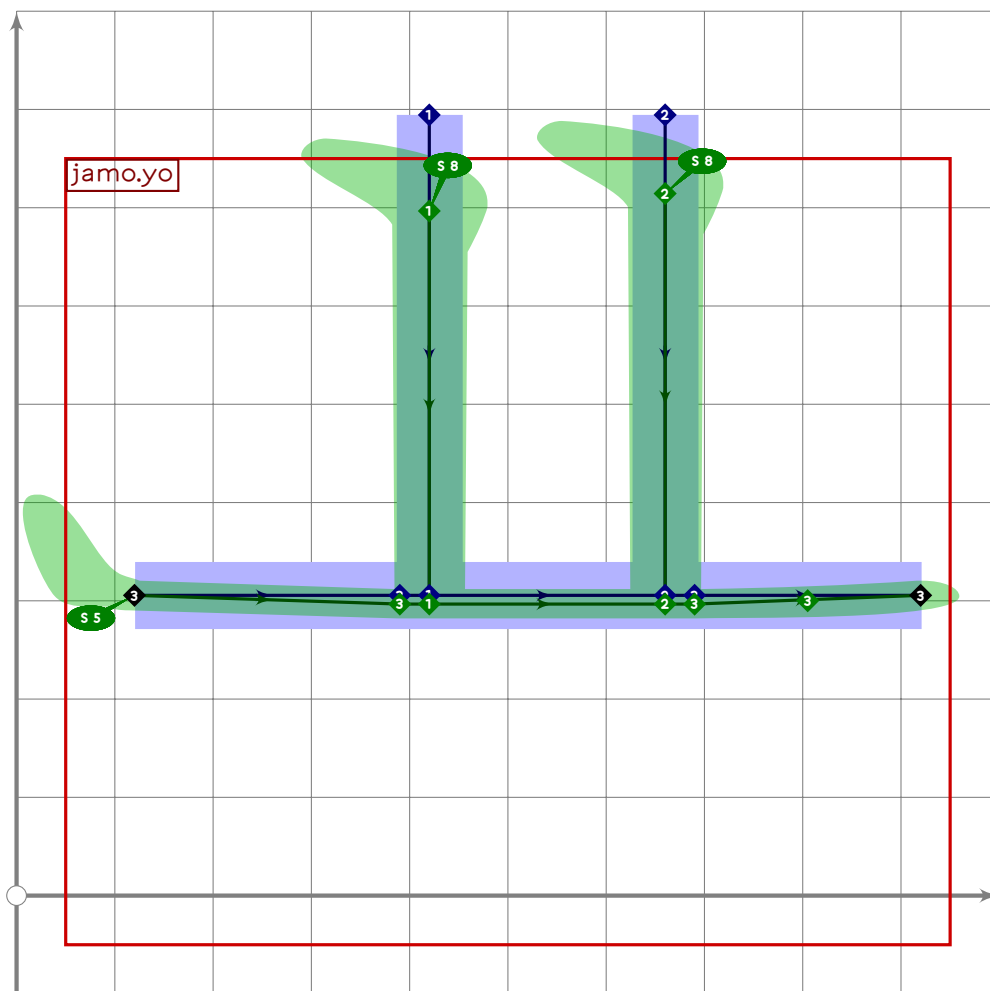


```

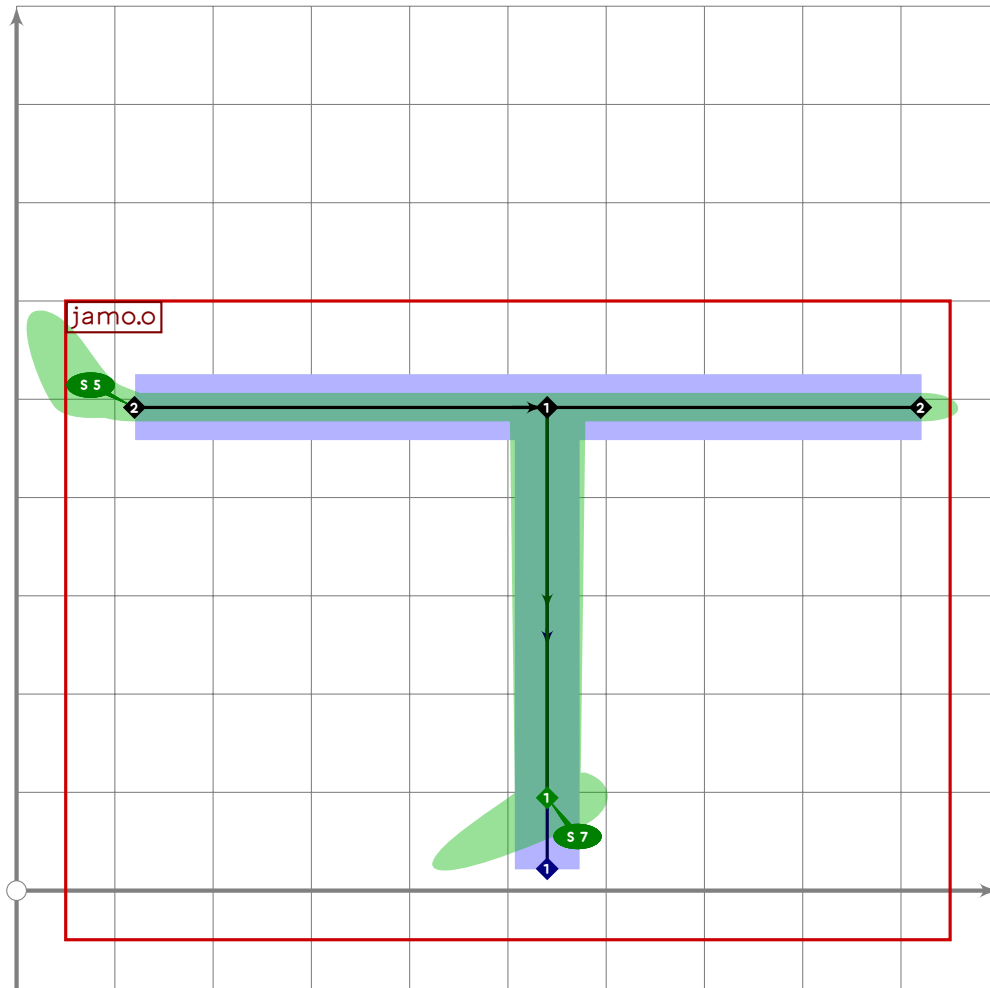
292 % hangul oe
293 begintsuglyph("uni315A",90);
294 hangul.combine.lr(308,320)(311,hxf((500,400),(950,-50)),identity);
295 tsu_render;
296 endtsuglyph;
297

```

U+315B
mande.uni315B



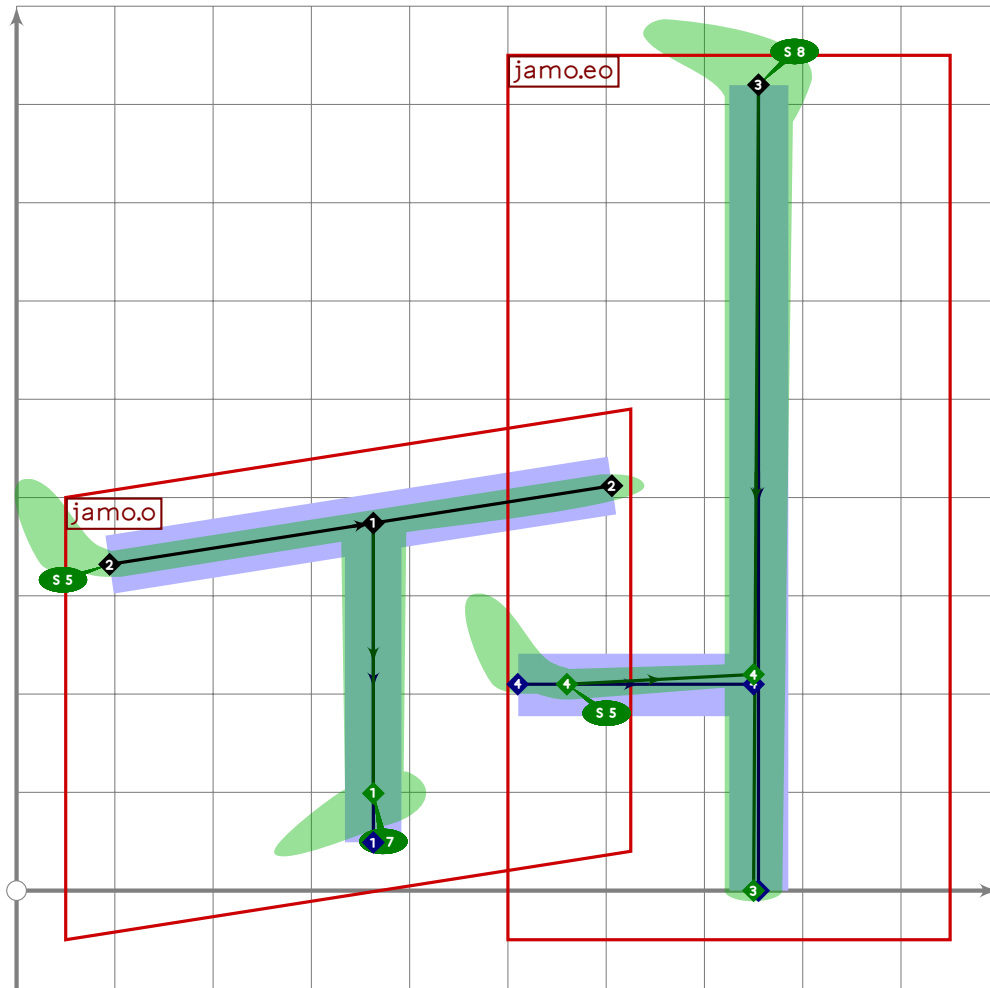
```
298 % hangul yo
299 begintsuglyph("uni315B";91);
300 hangul.jamo.yo(whatever;identity;identity);
301 tsu_render;
302 endtsuglyph;
303
```



```

304 % hangul u
305 begint Suglyph("uni315C";92);
306   hangul.jamo.u(whatever;identity,identity);
307   tsu_render;
308 endtsuglyph;
309

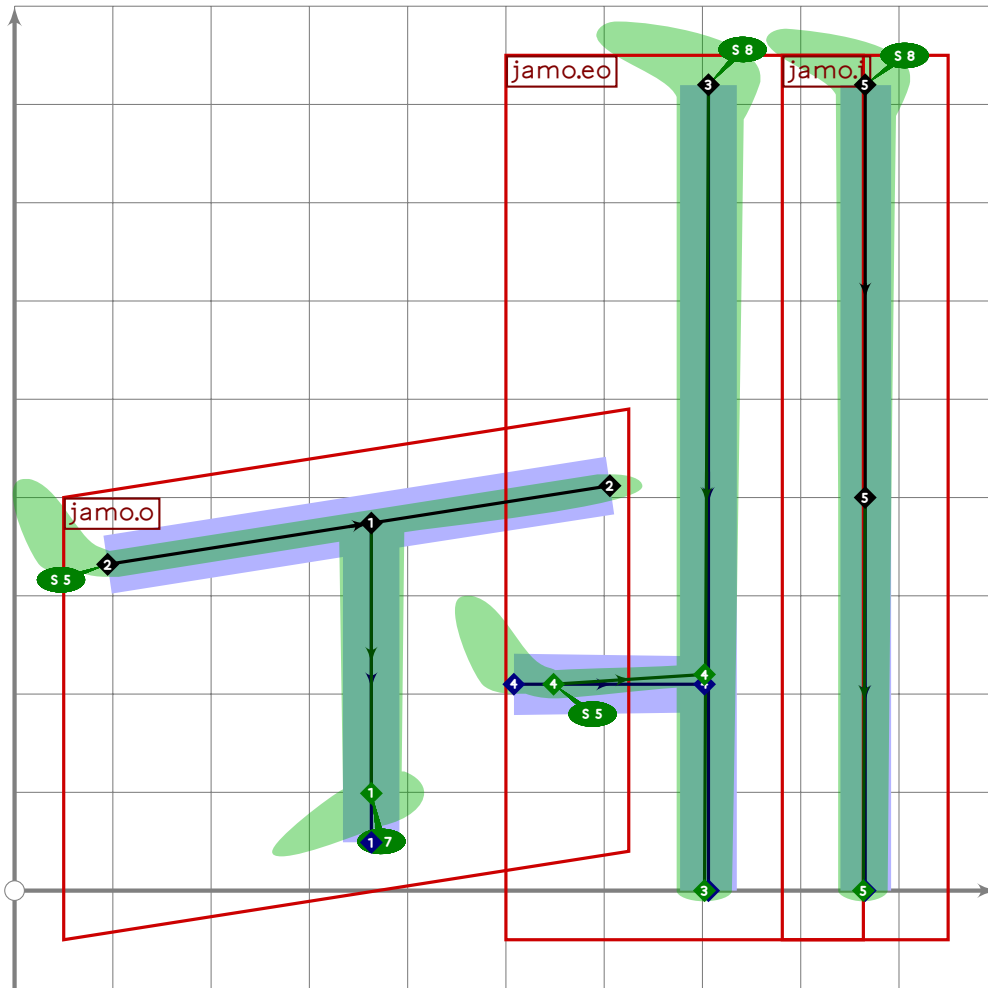
```



```

310 % hangul weo
311 begintsuglyph("uni315D";93);
312   hangul.combine.lr(313,304)(314,hxf((500,400),(950,-50)),identity);
313   tsu_render;
314 endtsuglyph;
315

```

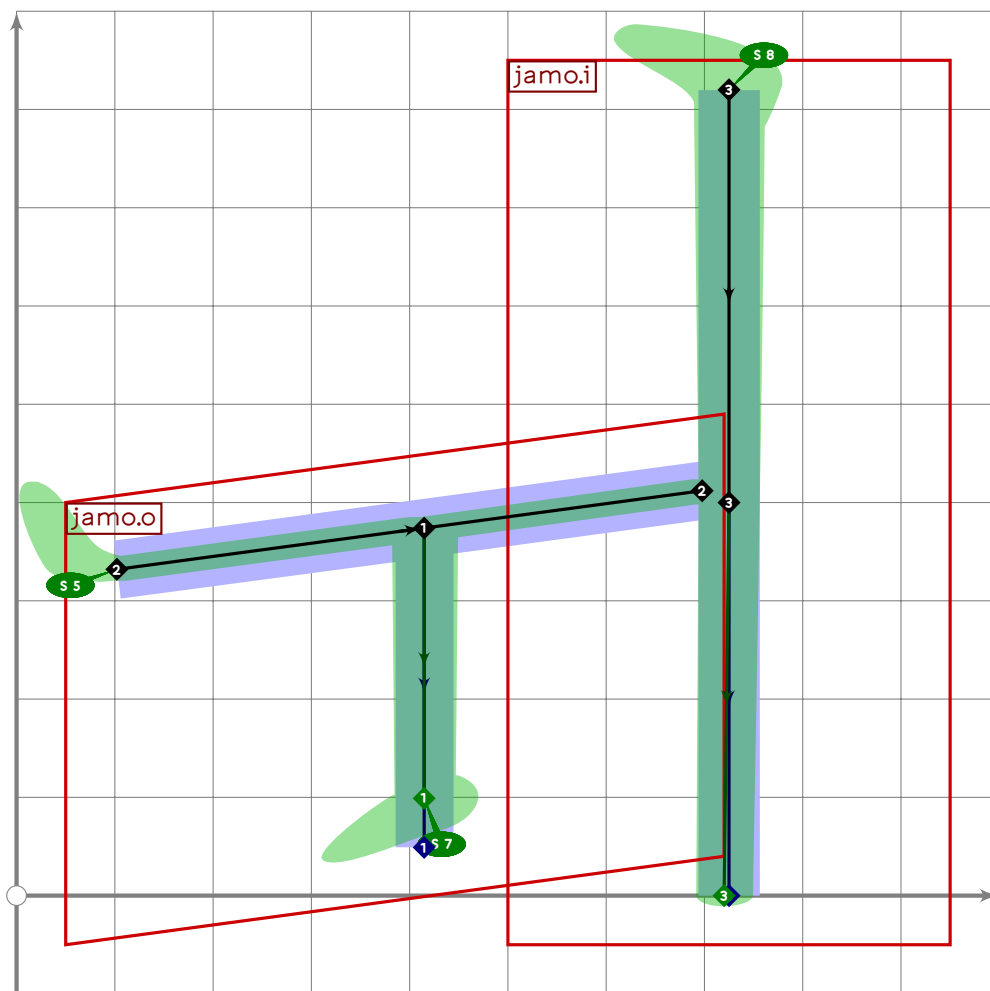



```

316 % hangul we
317 begintsuglyph("uni315E";94);
318 hangul.combine.lr(313,305)(315,hxf((500,400),(950,-50)),identity);
319 tsu_render;
320 endtsuglyph;
321

```

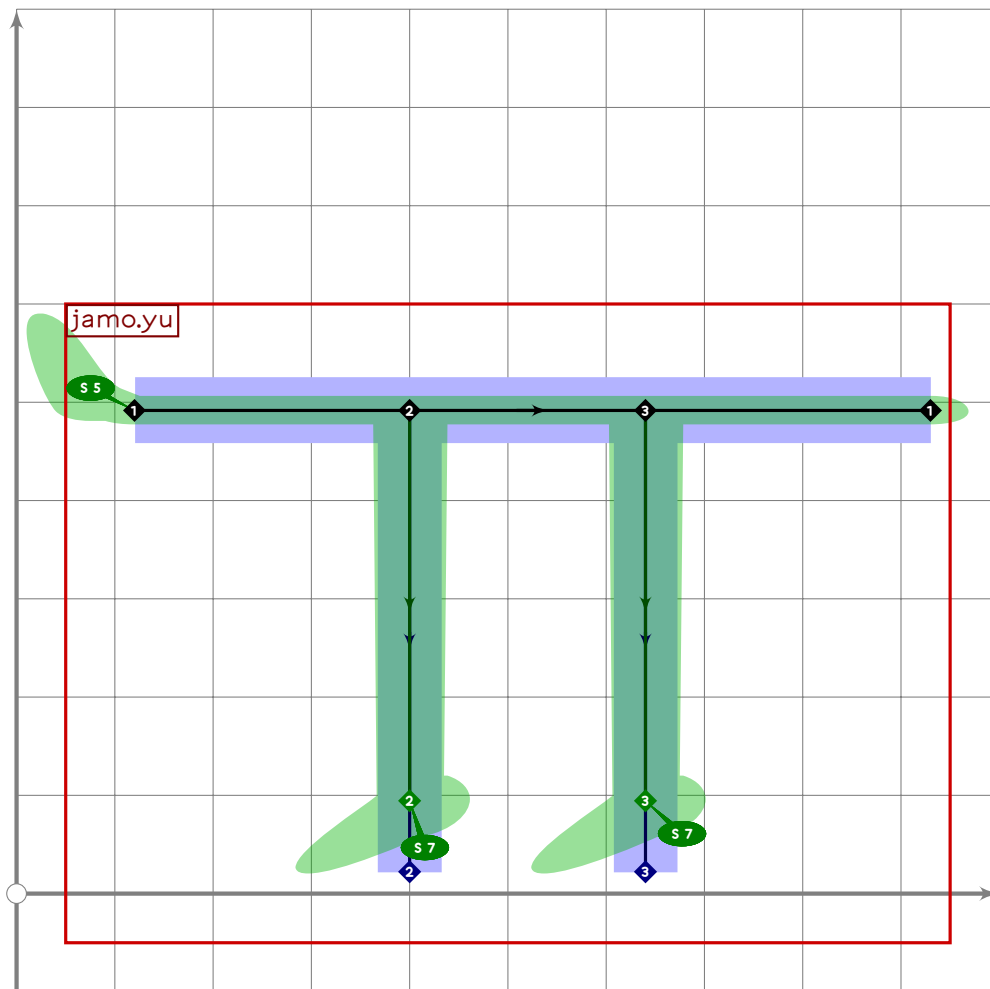
U+315F
mande.uni315F



```

322 % hangul wi
323 begintsuglyph("uni315F",95);
324   hangul.combine.lr(313,320)(316,hxf((500,400),(950,50)),identity);
325   tsu_render;
326 endtsuglyph;
327

```

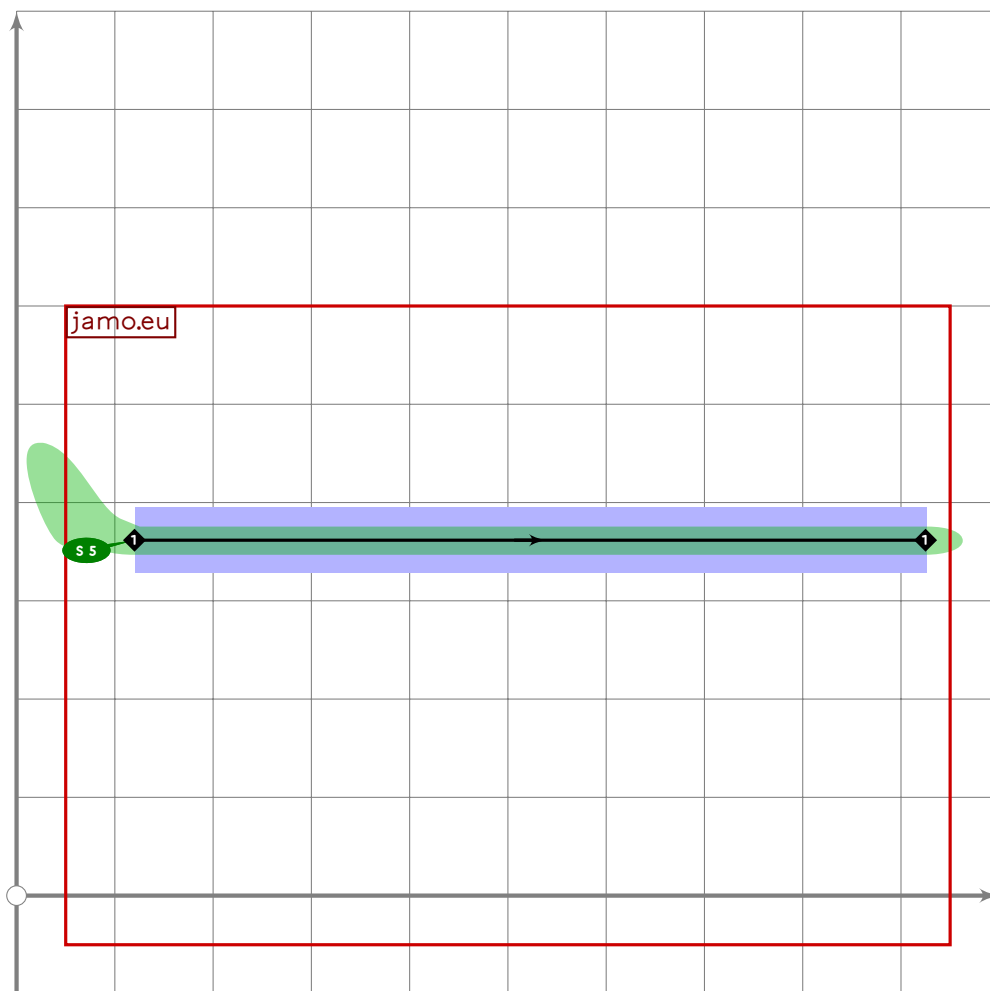


```

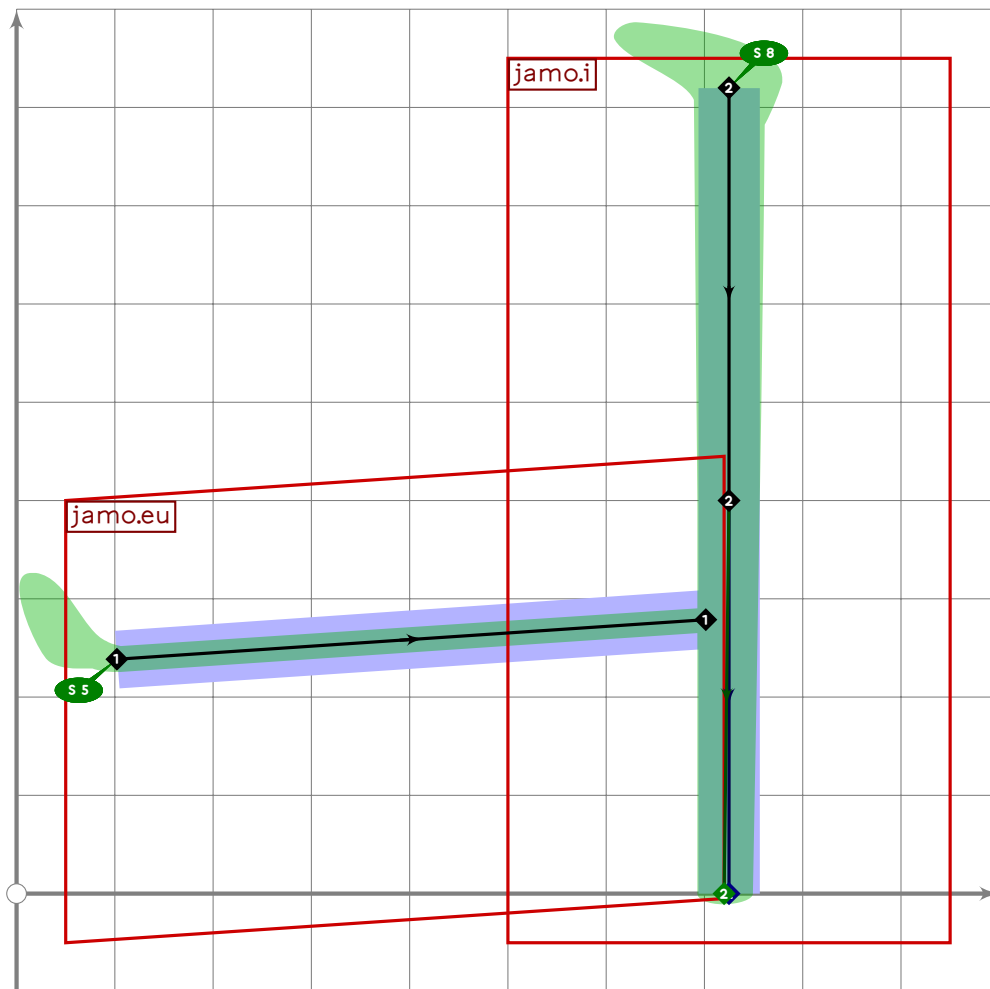
328 % hangul yu
329 beginsuglyph("uni3160",96);
330   hangul.jamo.yu(whatever,identity,identity);
331   tsu_render;
332 endsuglyph;
333

```

U+3161
mande.uni3161



```
334 % hangul eu
335 beginsuglyph("uni3161";97);
336   hangul.jamo.eu(whatever;identity,identity);
337   tsu_render;
338 endsuglyph;
339
```

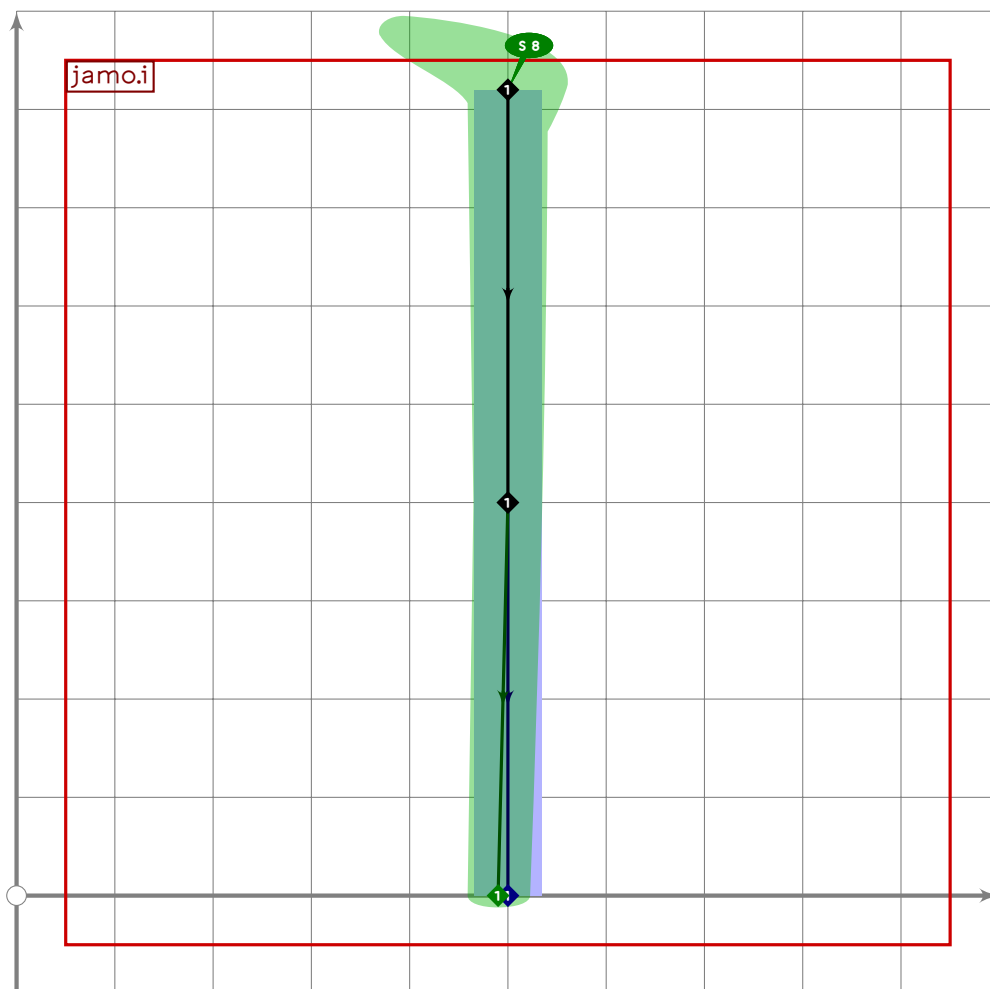


```

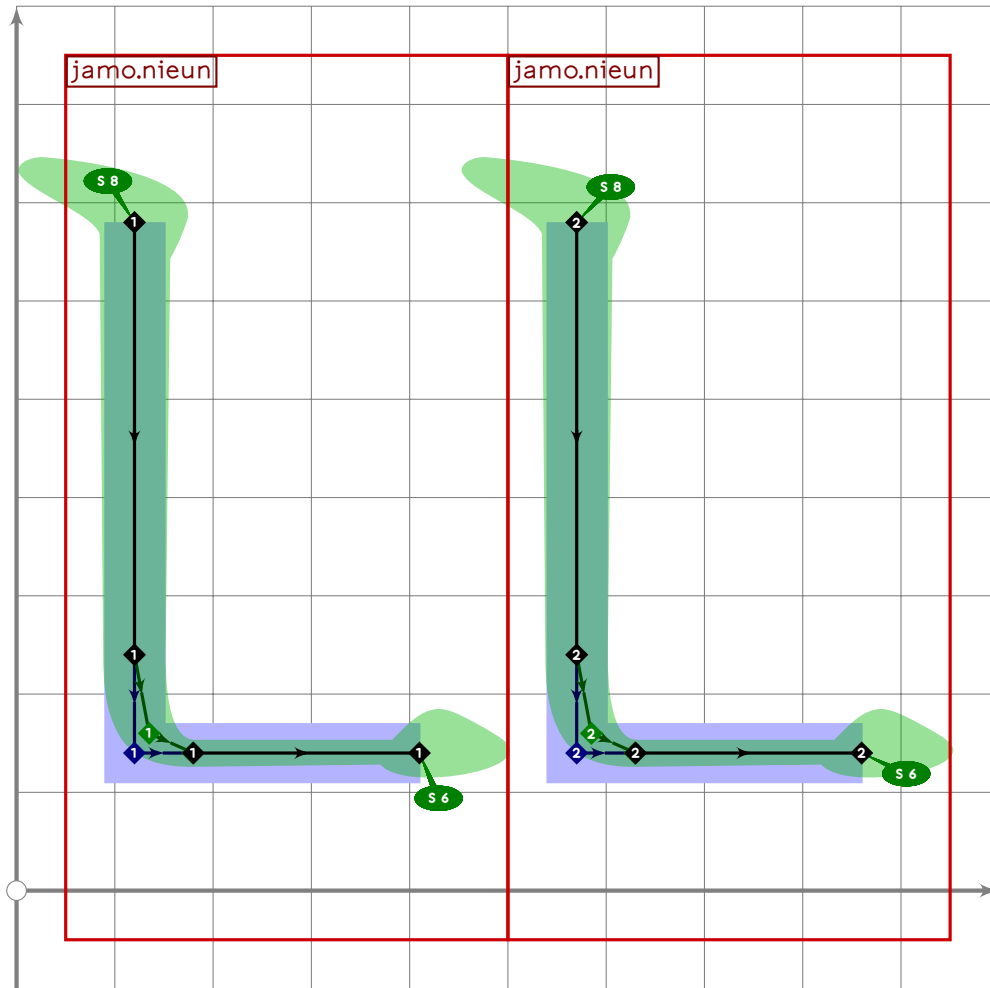
340 % hangul yi
341 begint Suglyph("uni3162",98);
342   hangul.combine.lr(318,320)(319,hxf((500,400),(950,-50)),identity);
343   tsu_render;
344 endtsuglyph;
345

```

U+3163
mande.uni3163



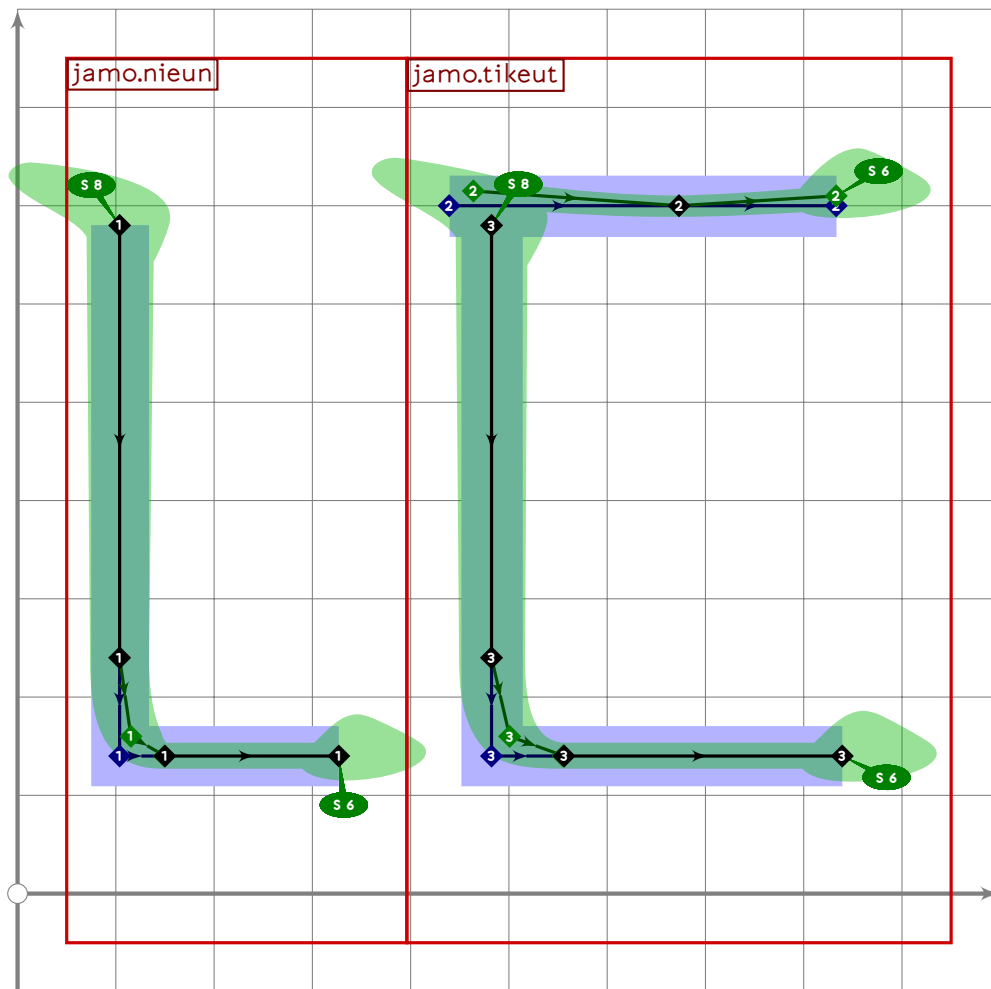
```
346 % hangul i
347 begint Suglyph("uni3163";99);
348   hangul.jamo.i(whatever,identity,identity);
349   tsu_render;
350 endtsuglyph;
351
352 % uni3164 is "hangul filler," a full-width space created by external script
353
```



```

354 % hangul ssangnieun
355 begint Suglyph("uni3165";101);
356   hangul.combine.lr(102,102)(whatever;identity,identity);
357   tsu_render;
358 endtsuglyph;
359

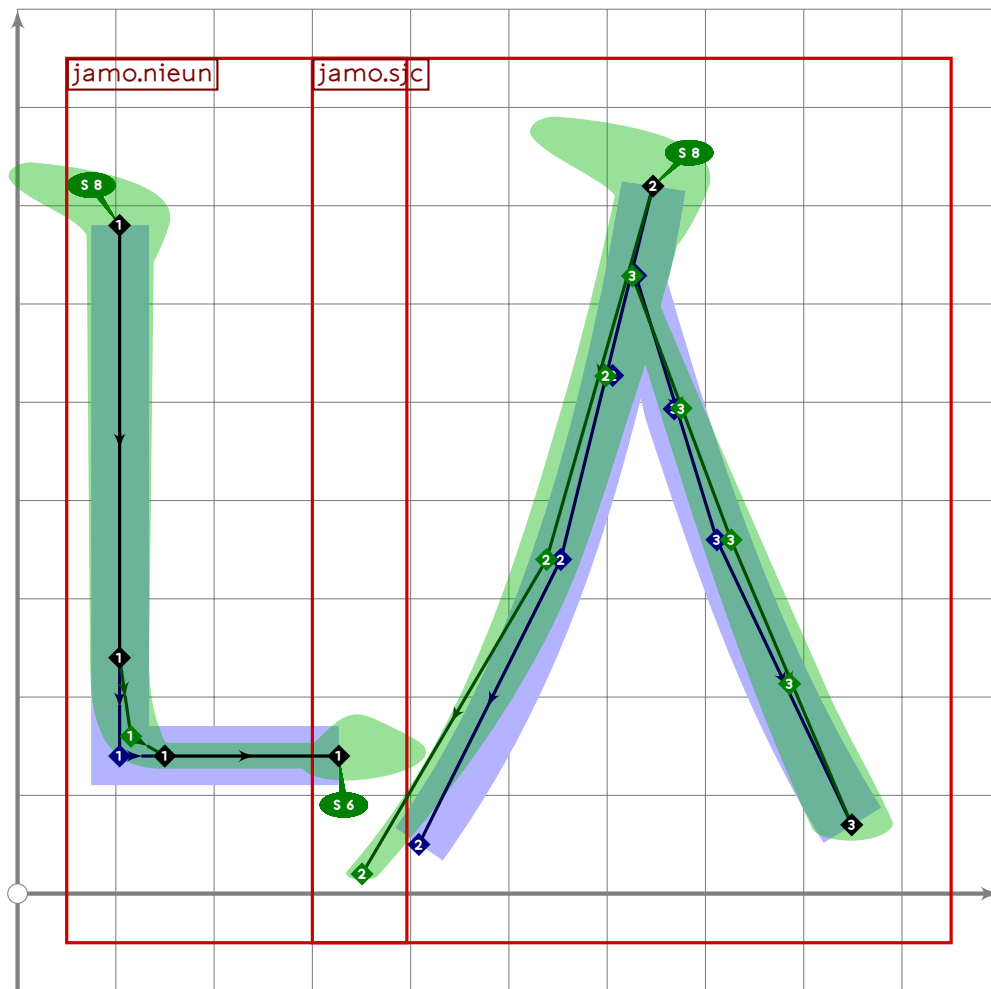
```



```

360 % hangul nieun-tikeut
361 begintsuglyph("uni3166";102);
362   hangul.combine.lr(102,103)(whatever;identity,identity);
363   tsu_render;
364 endsuglyph;
365

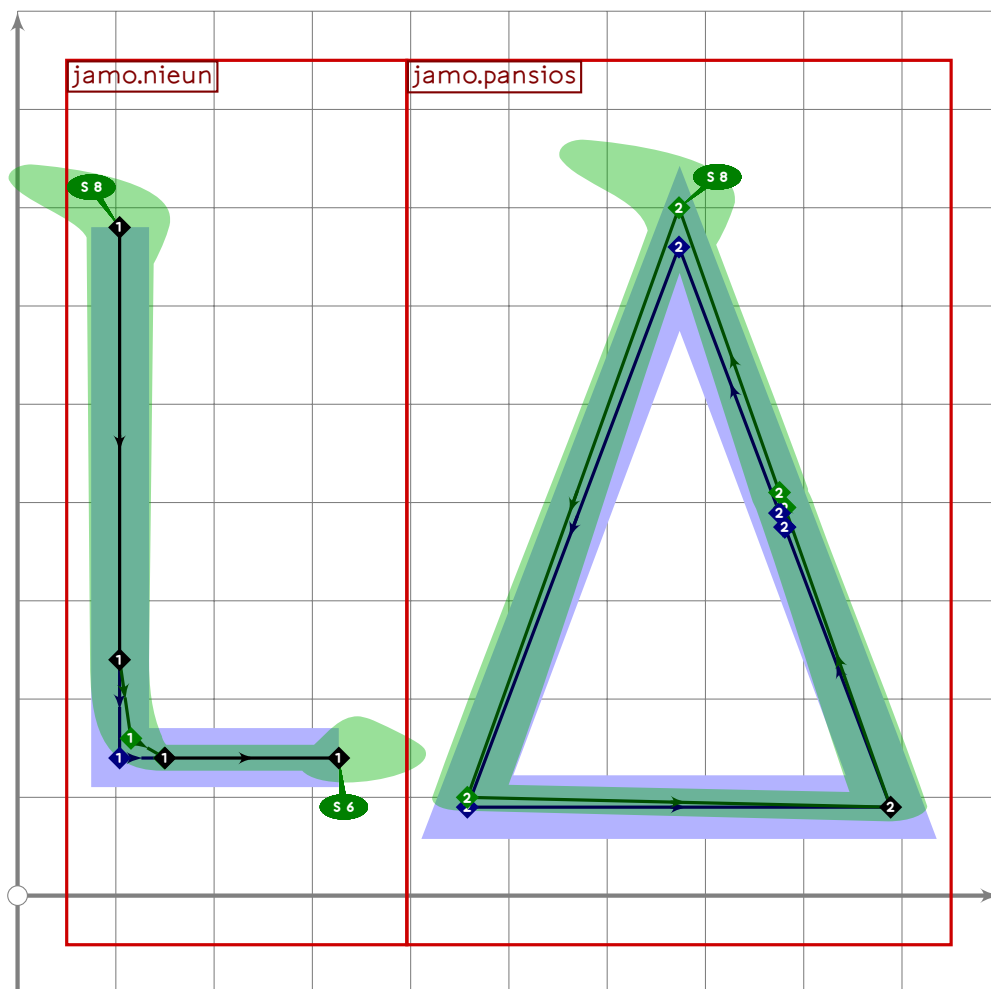
```

```

366 % hangul nieun-sios
367 begintsuglyph("uni3167",103);
368 hangul.combine.lr(102,109)(whatever;identity,identity);
369 tsu_render;
370 endsuglyph;
371

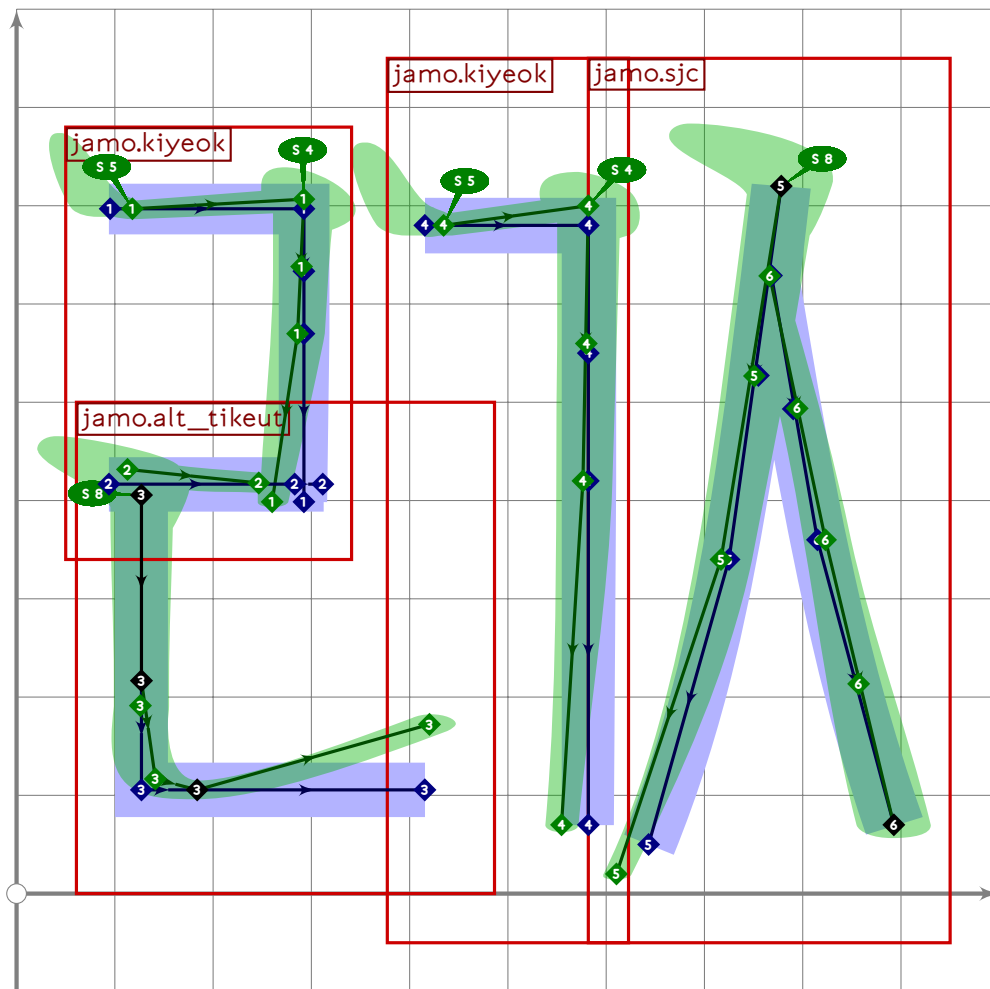
```



```

372 % hangul nieun-pansios
373 beginsuglyph("uni3168",104);
374   hangul.combine.lr(102,219)(whatever,identity,identity);
375   tsu_render;
376 endsuglyph;
377

```

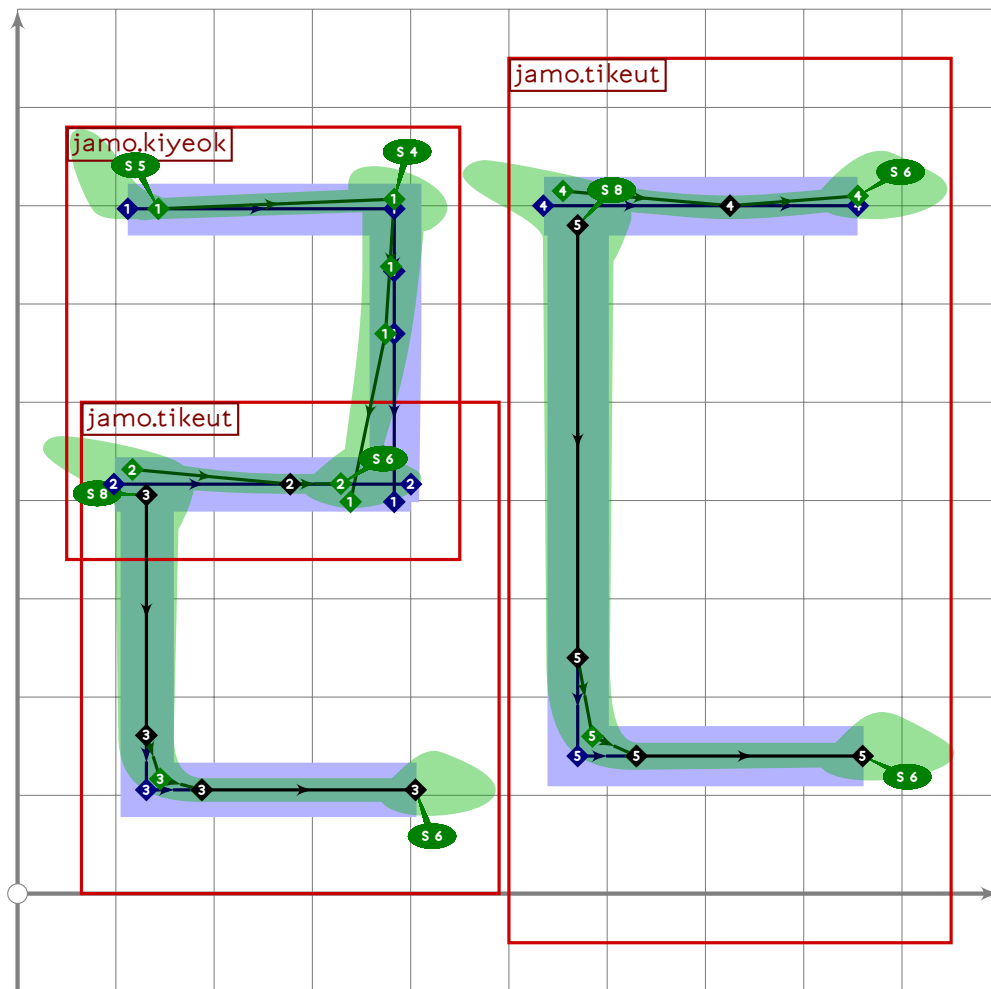


```

378 % hangul rieul-kiyeok-sios
379 begintsuglyph("uni3169";105);
380 hangul.combine.lcr(205,100,109)(whatever;identity,identity);
381 tsu_render;
382 endtsuglyph;
383

```

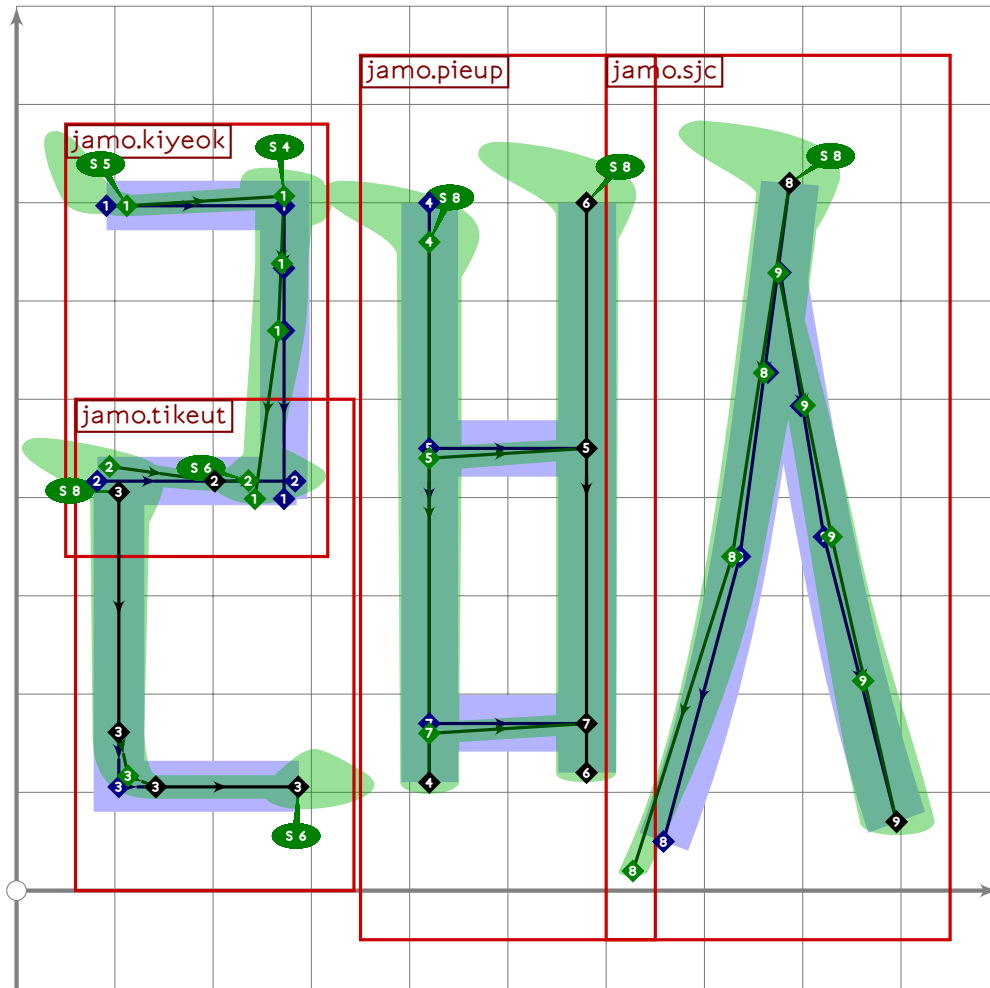
U+316A
mande.uni316A



```

384 % hangul rieul-tikeut
385 beginsuglyph("uni316A",106);
386 hangul.combine.lr(105,103)(whatever;identity,identity);
387 tsu_render;
388 endsuglyph;
389

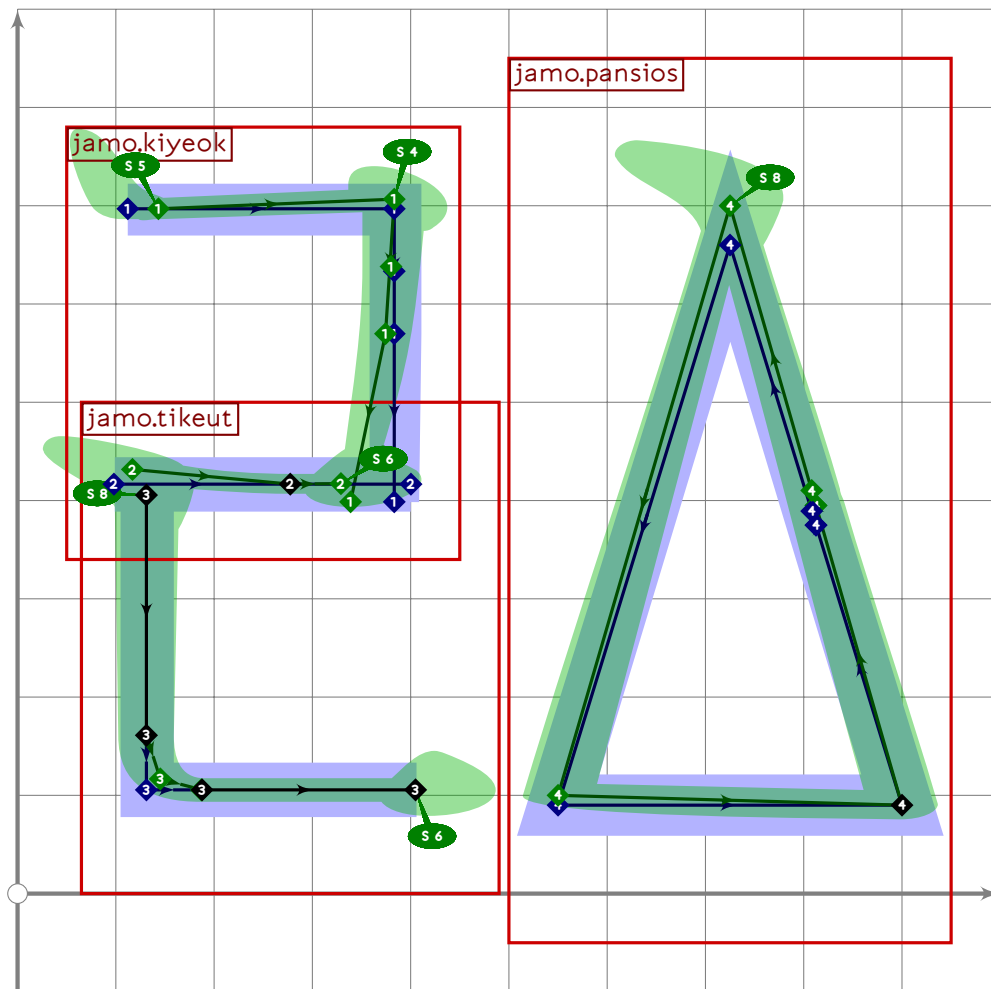
```



```

390 % hangul rieul-pieup-sios
391 beginsuglyph("uni316B",107);
392   hangul.combine.lcr(105,107,109)(whatever,identity,identity);
393   tsu_render;
394 endsuglyph;
395

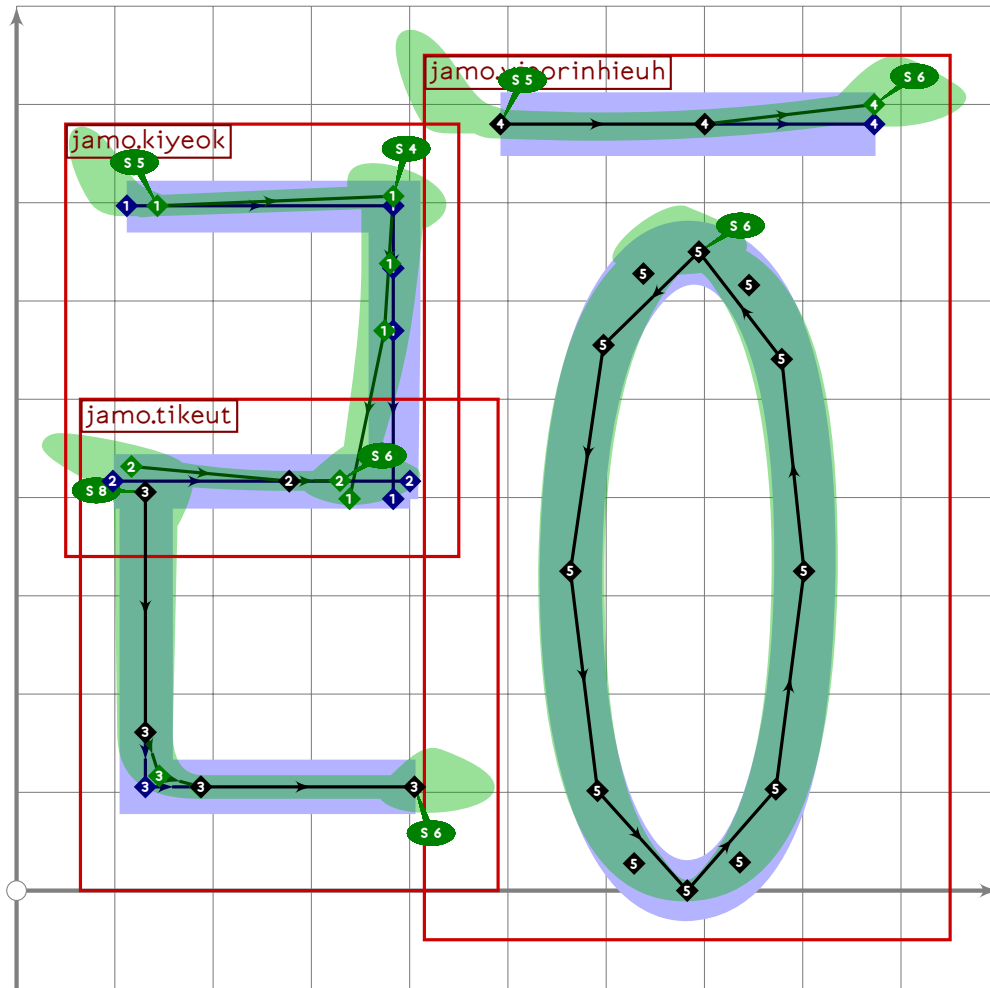
```



```

396 % hangul rieul-pansios
397 beginsuglyph("uni316C",108);
398   hangul.combine.lr(105,219)(whatever;identity,identity);
399   tsu_render;
400 endsuglyph;
401

```

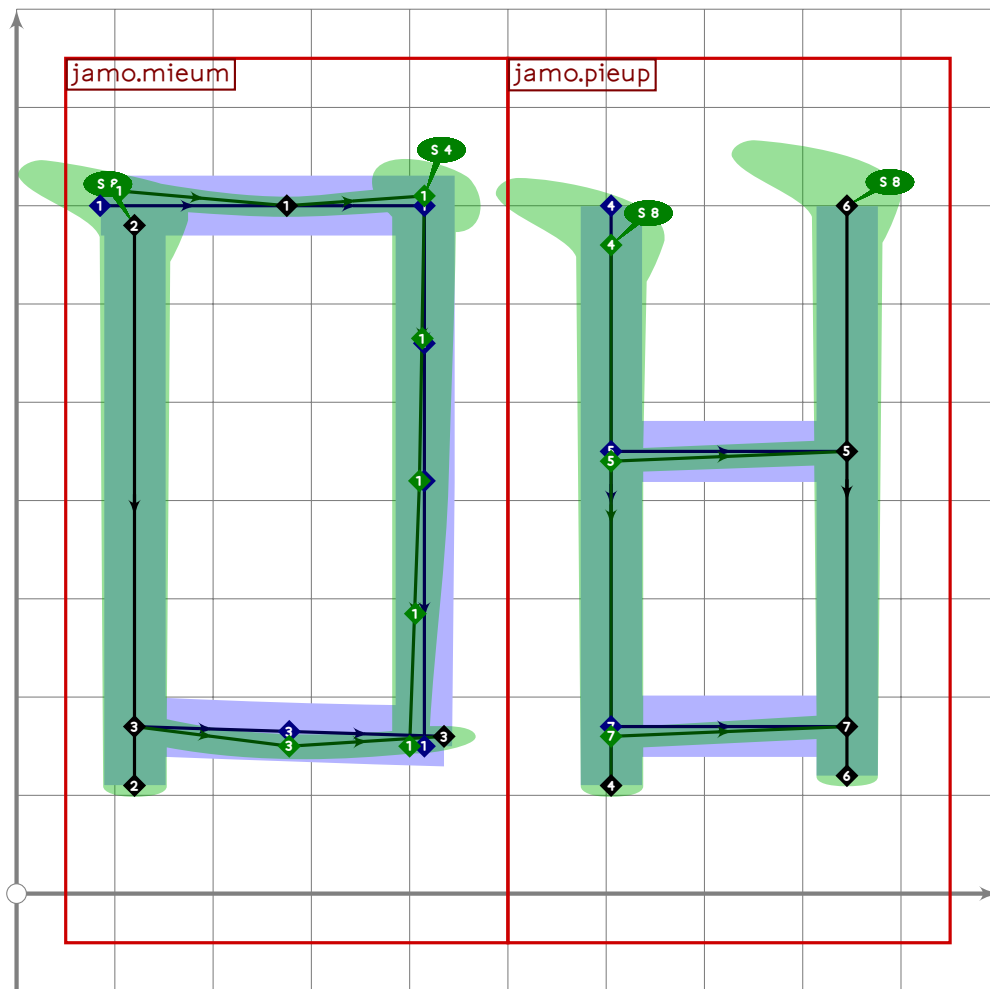


```

402 % hangul rieul-yeorinhieuh
403 beginsuglyph("uni316D",109);
404   hangul.combine.lr(105,221)(whatever,identity,identity);
405   tsu_render;
406 endsuglyph;
407

```

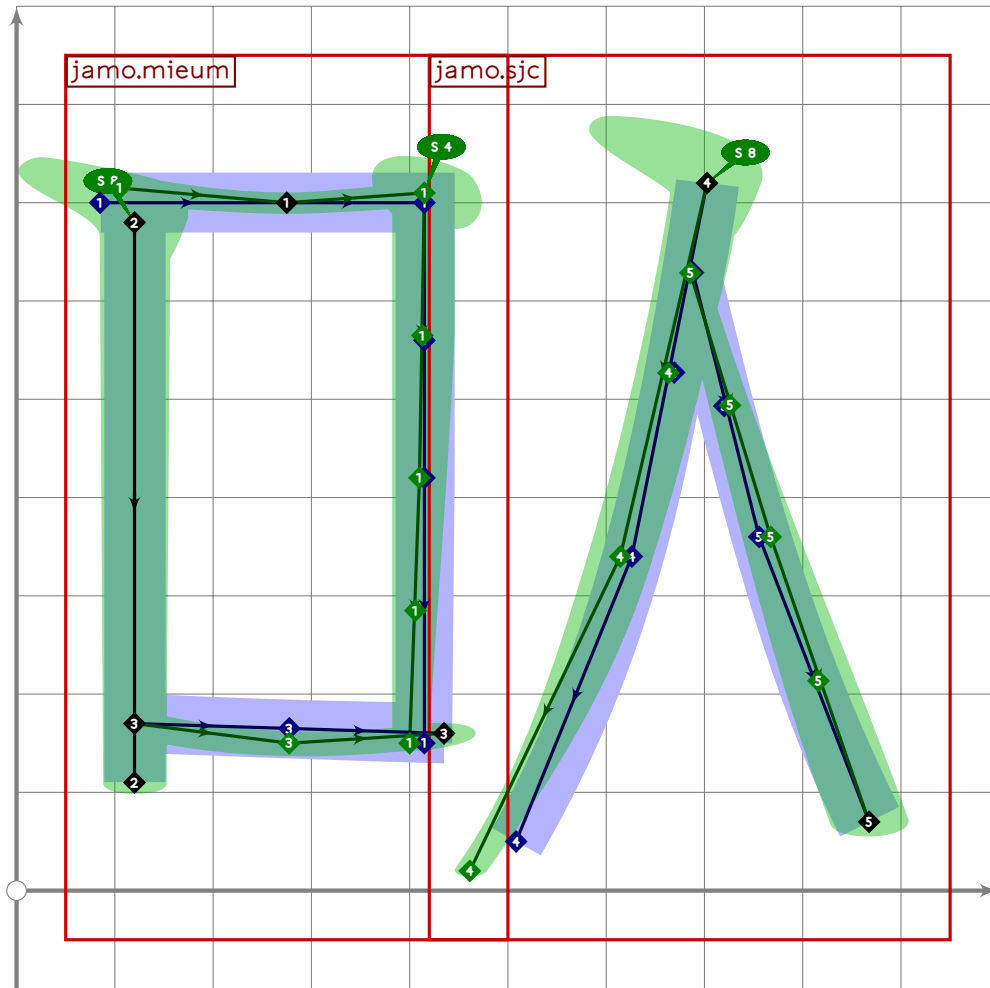
U+316E
mande.uni316E



```

408 % hangul mieum-pieup
409 begintsuglyph("uni316E",110);
410 hangul.combine.lr(106,107)(whatever,identity,identity);
411 tsu_render;
412 endtsuglyph;
413

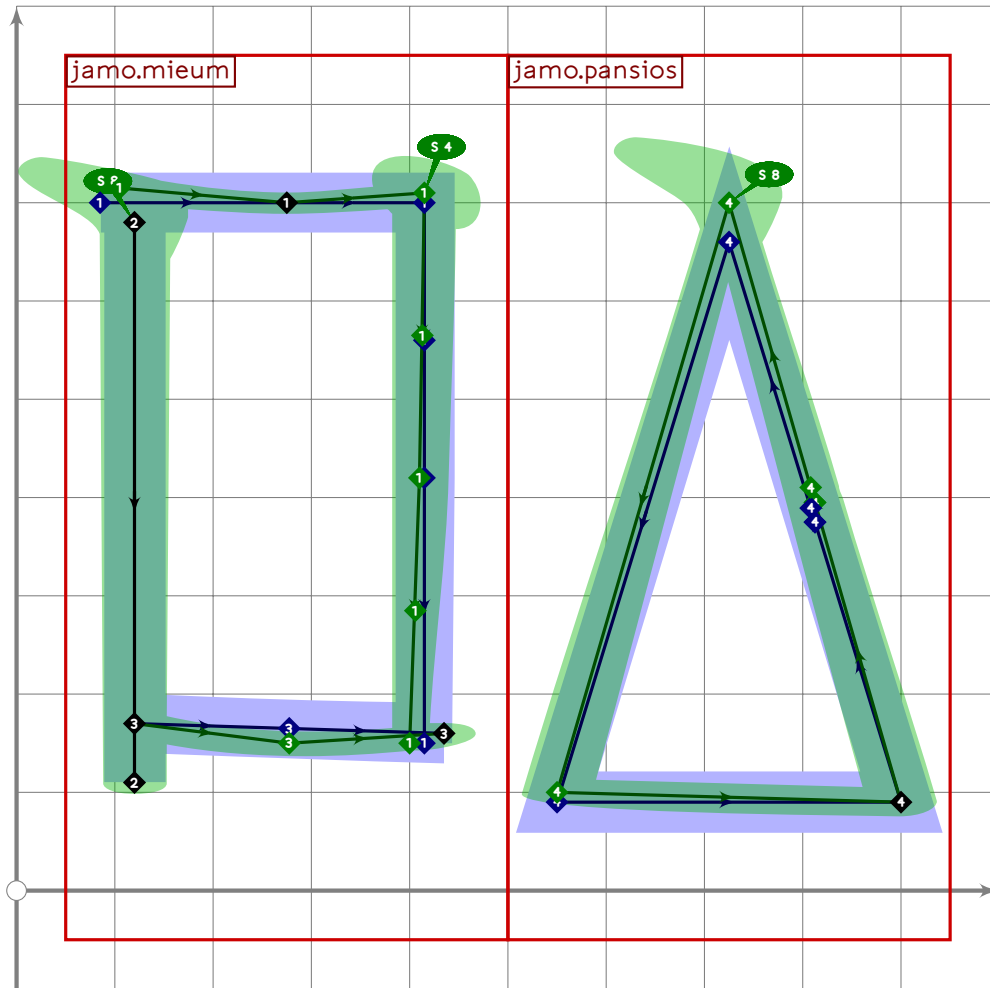
```

```

414 % hangul mieum-sios
415 begint Suglyph("uni316F",111);
416 hangul.combine.lr(106,109)(whatever;identity,identity);
417 tsu_render;
418 endtsuglyph;
419

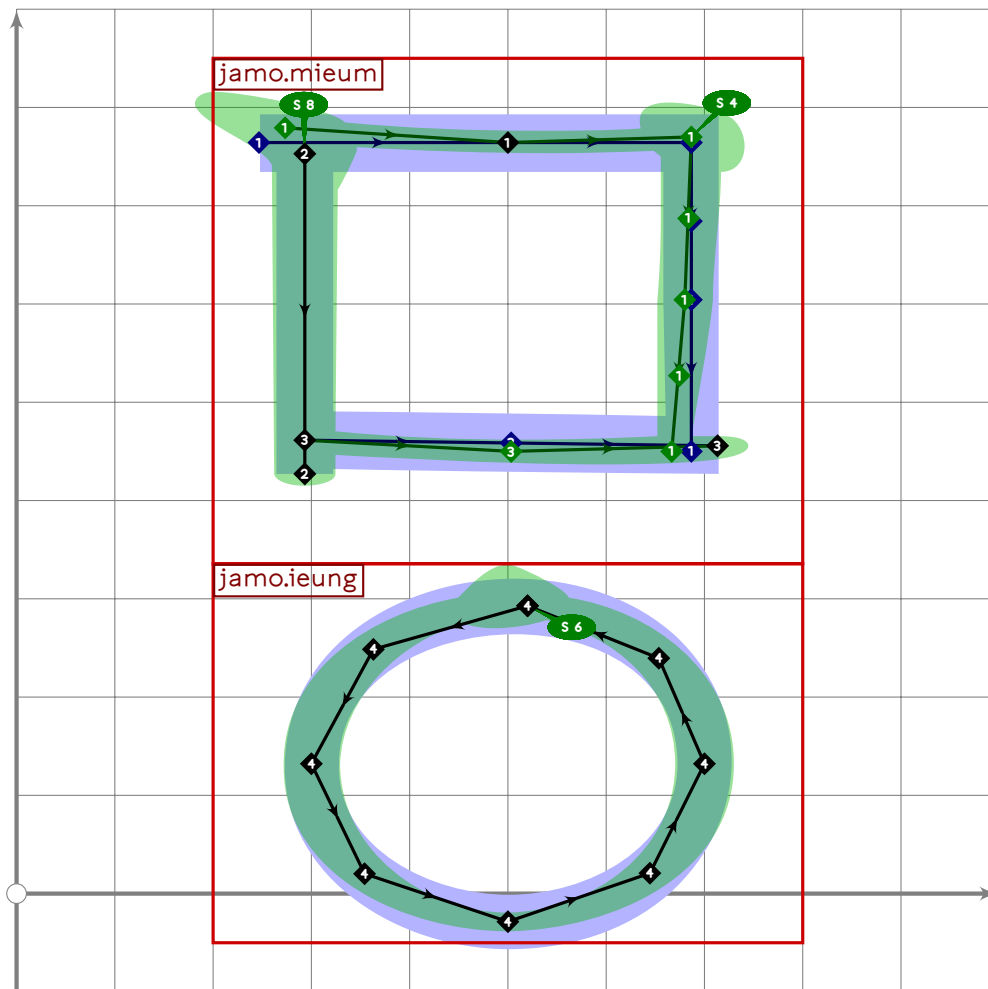
```



```

420 % hangul mieum-pansios
421 beginsuglyph("uni3170";112);
422 hangul.combine.lr(106,219)(whatever;identity;identity);
423 tsu_render;
424 endtsuglyph;
425

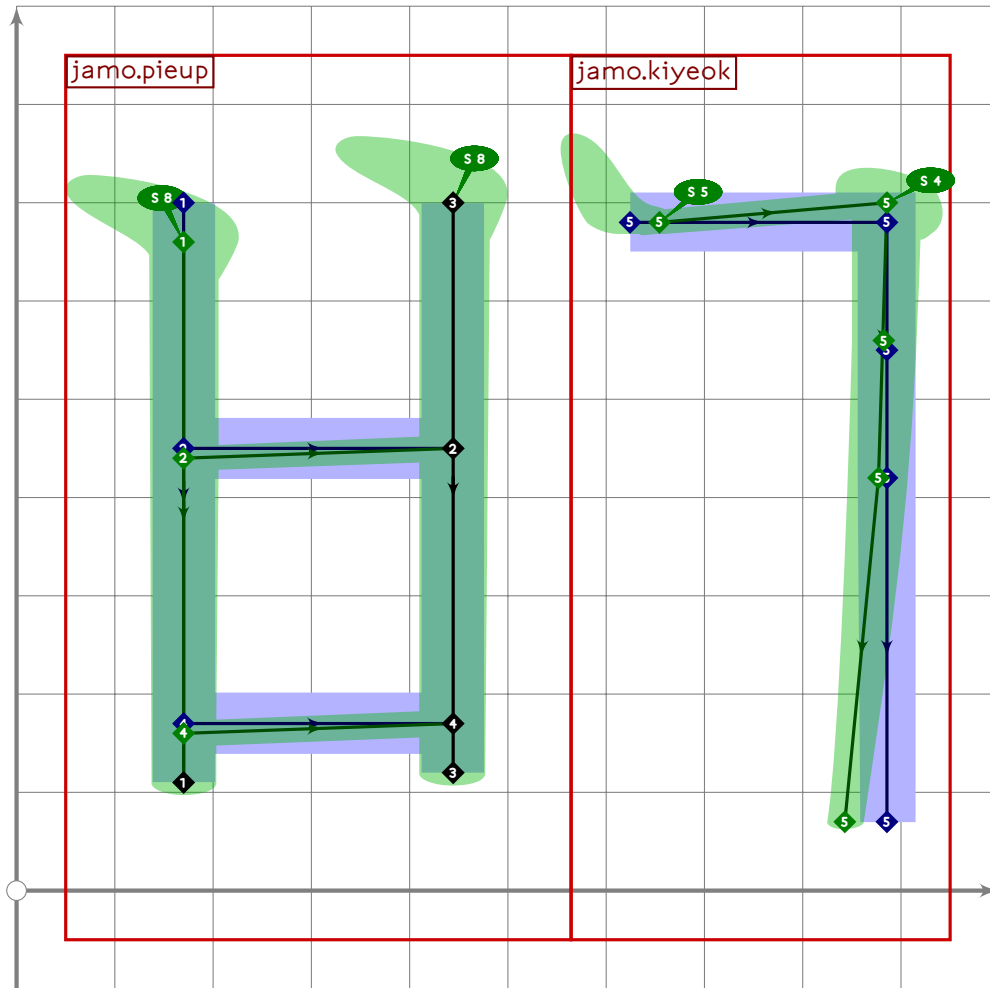
```



```

426 % hangul kapyeounmieum
427 begintsuglyph("uni3171";113);
428 hangul.combine.tb(106,521)(whatever,hxf((200,850),(800,50)),identity);
429 tsu_render;
430 endtsuglyph;
431

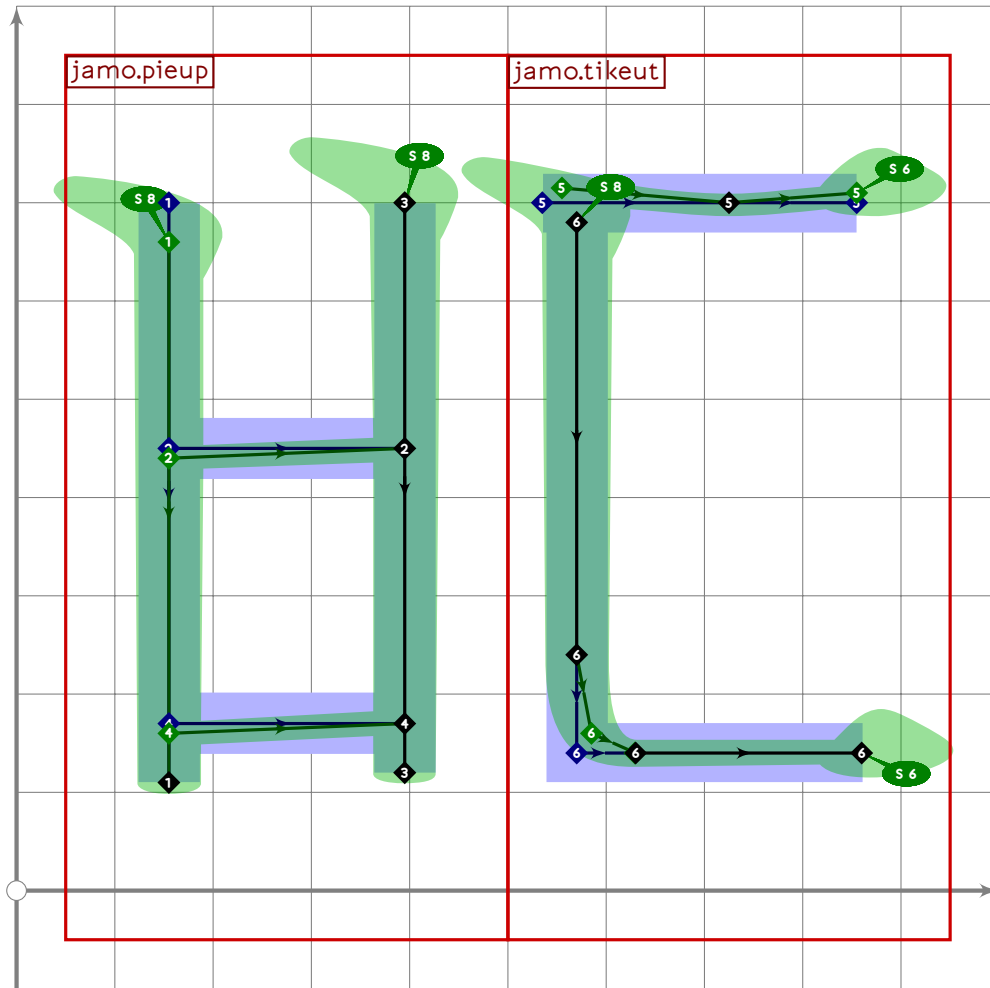
```



```

432 % hangul pieup-kiyeok
433 begint Suglyph("uni3172",114);
434 hangul.combine.lr(107,100)(whatever;identity,identity);
435 tsu_render;
436 endtsuglyph;
437

```

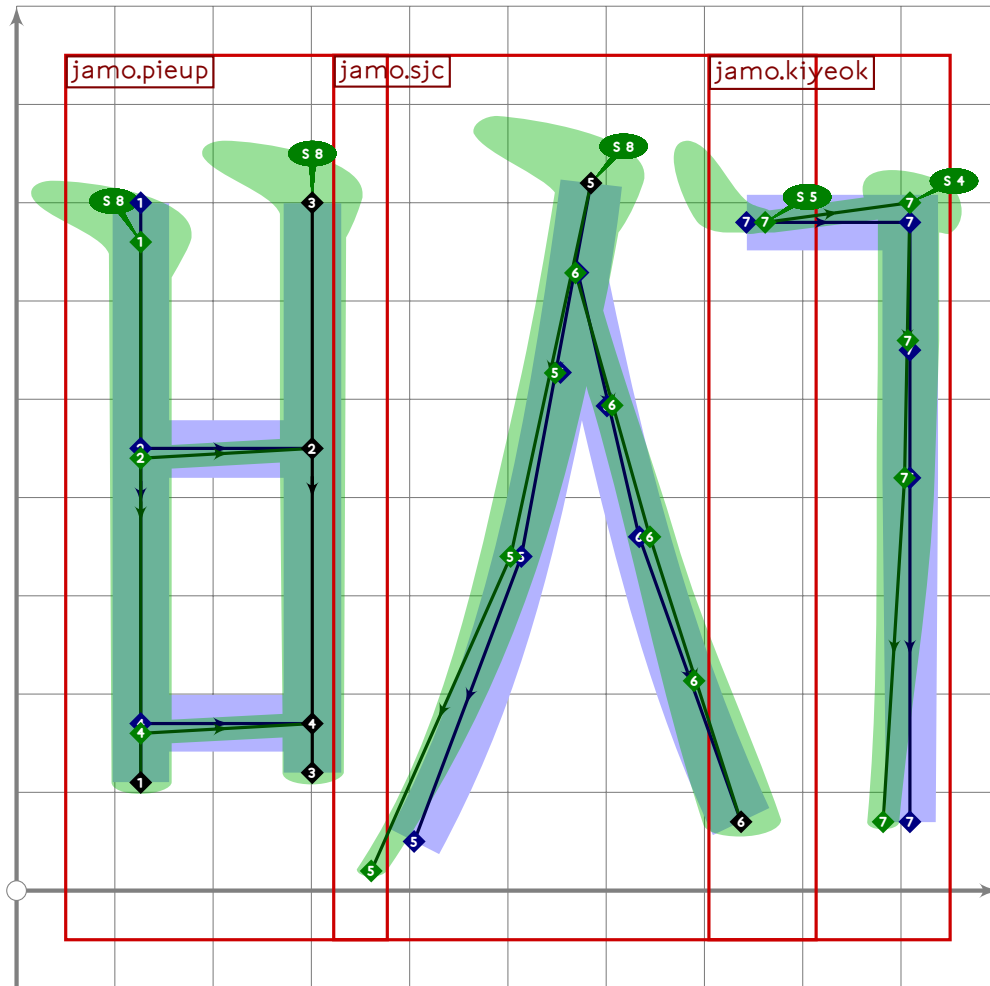


```

438 % hangul pieup-tikeut
439 begintsuglyph("uni3173";115);
440 hangul.combine.lr(107,103)(whatever,identity,identity);
441 tsu_render;
442 endtsuglyph;
443

```

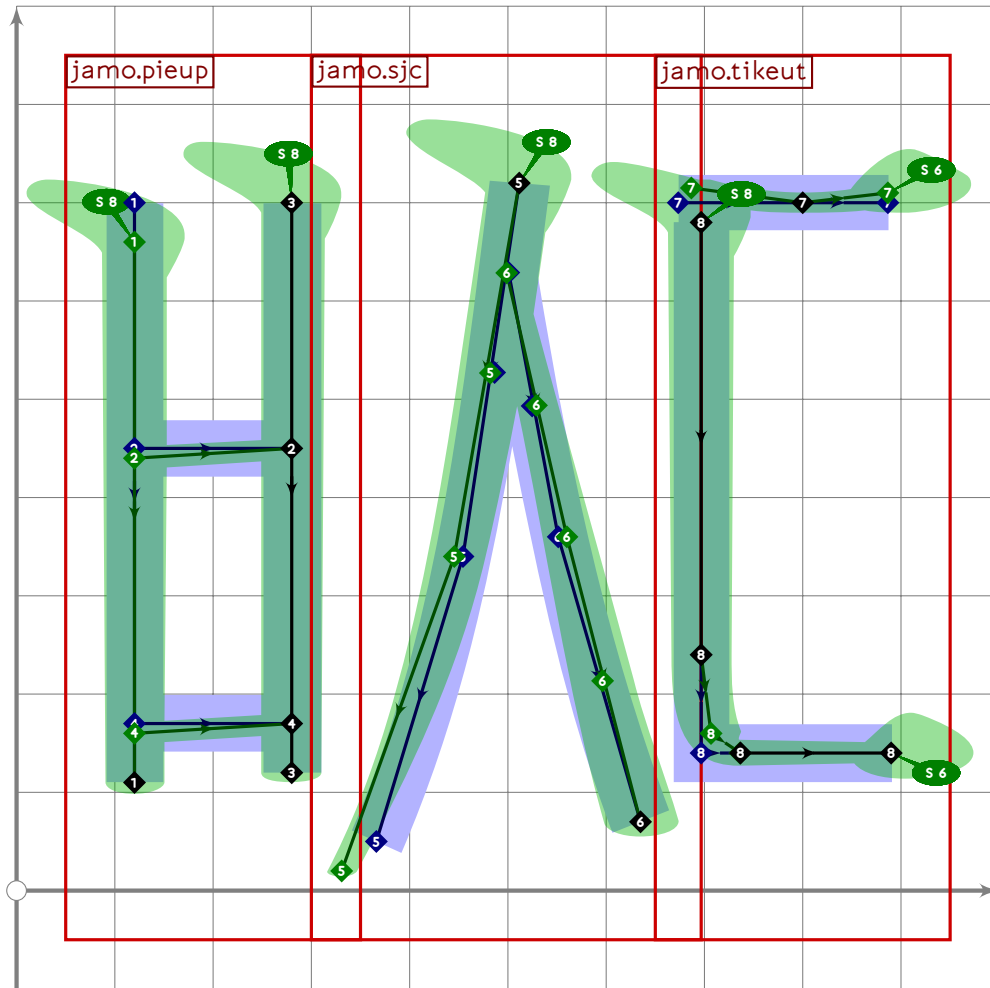
U+3174
mande.uni3174



```

444 % hangul pieup-sios-kiyeok
445 beginsuglyph("uni3174";116);
446 hangul.combine.lcr(107,109;100)(whatever;identity;identity);
447 tsu_render;
448 endsuglyph;
449

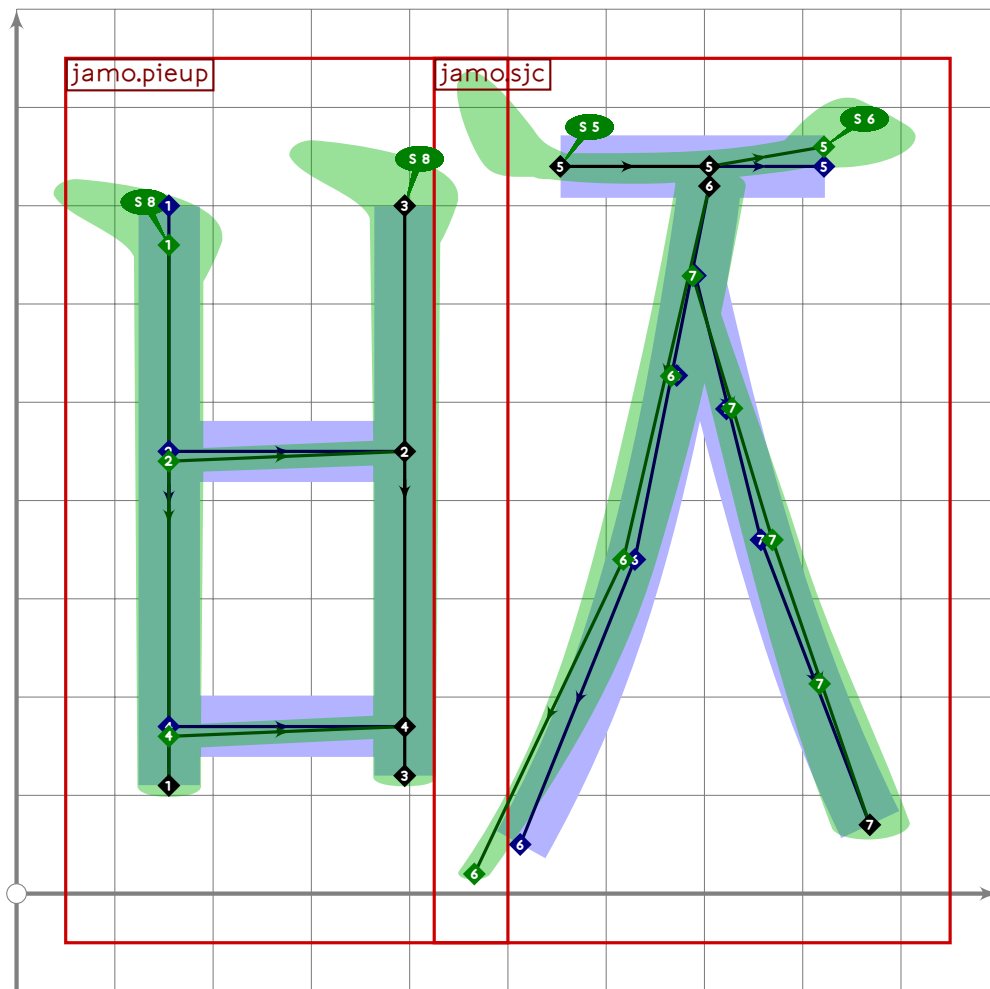
```



```

450 % hangul pieup-sios-tikeut
451 beginsuglyph("uni3175";117);
452   hangul.combine.lcr(107,109,103)(whatever;identity,identity);
453   tsu_render;
454 endtsuglyph;
455

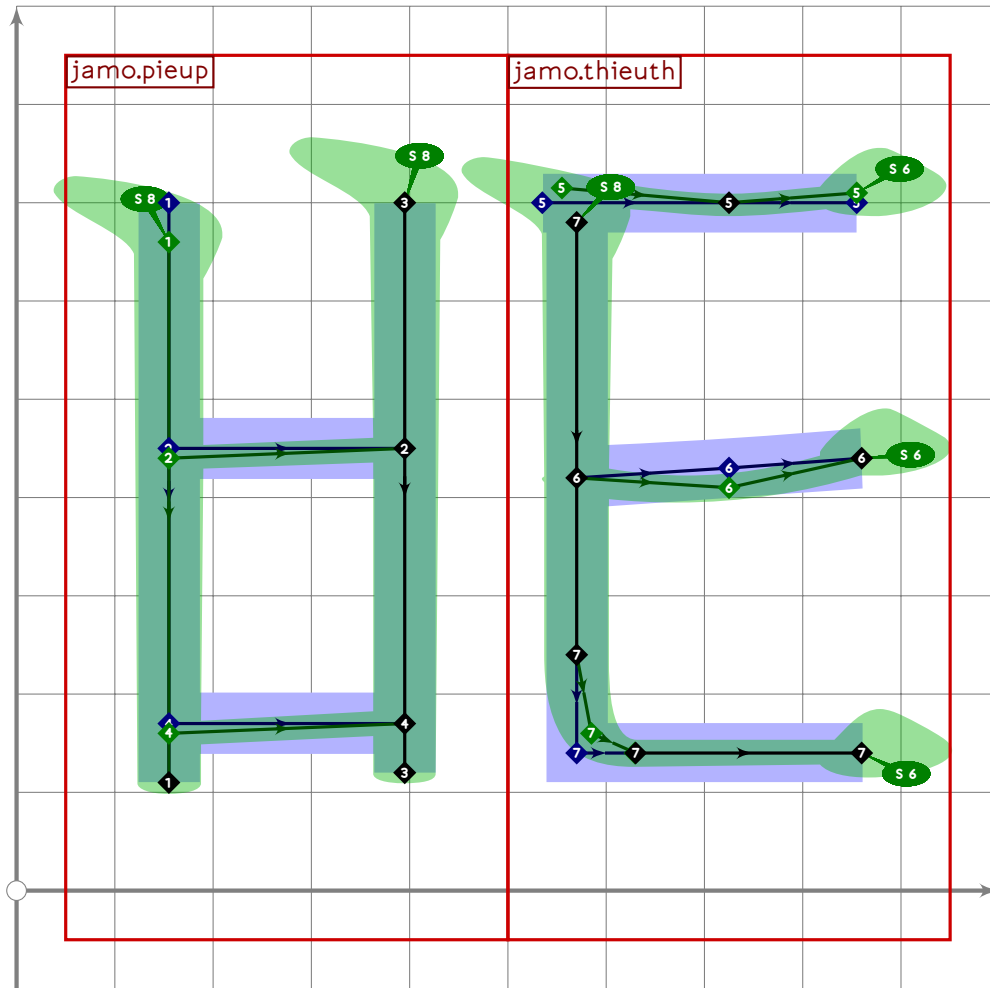
```



```

456 % hangul pieup-cieuc
457 begintsuglyph("uni3176",118);
458 hangul.combine.lr(107,112)(whatever,identity,identity);
459 tsu_render;
460 endtsuglyph;
461

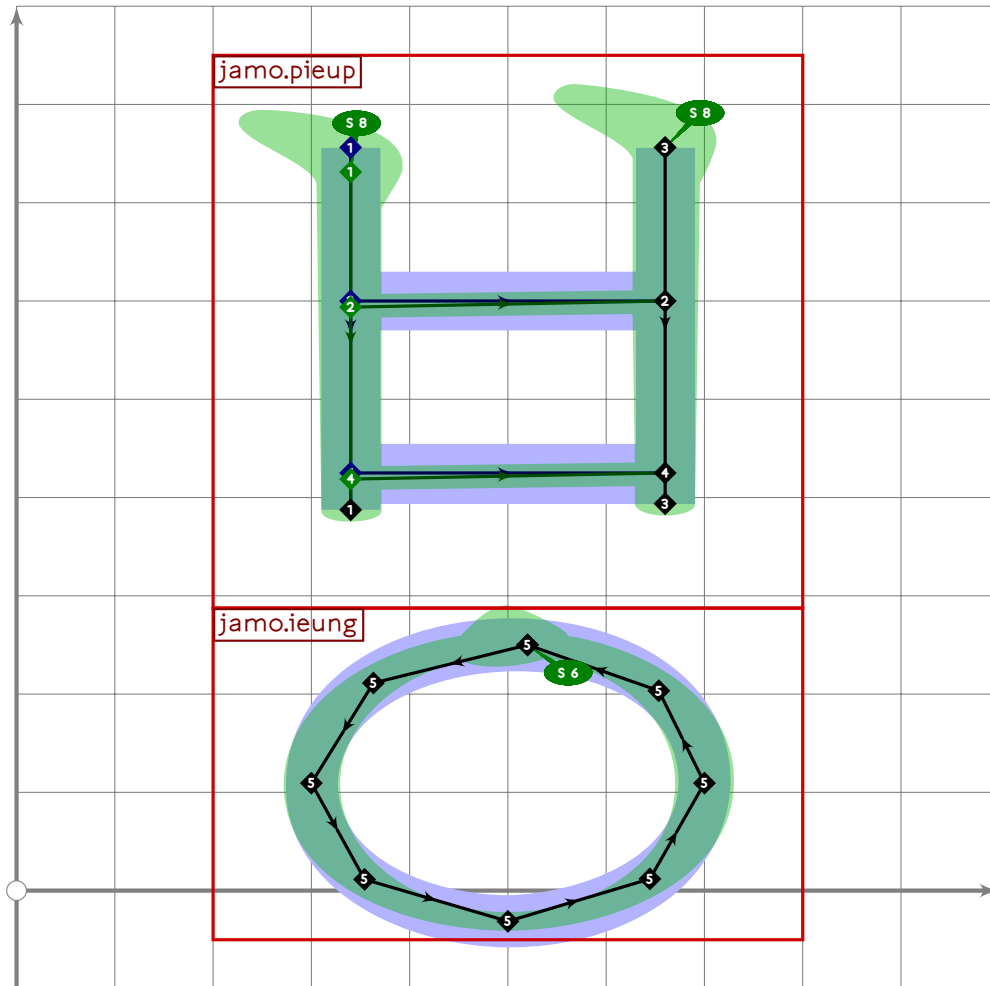
```

```

462 % hangul pieup-thieuth
463 begintsuglyph("uni3177",119);
464 hangul.combine.lr(107,116)(whatever,identity,identity);
465 tsu_render;
466 endtsuglyph;
467

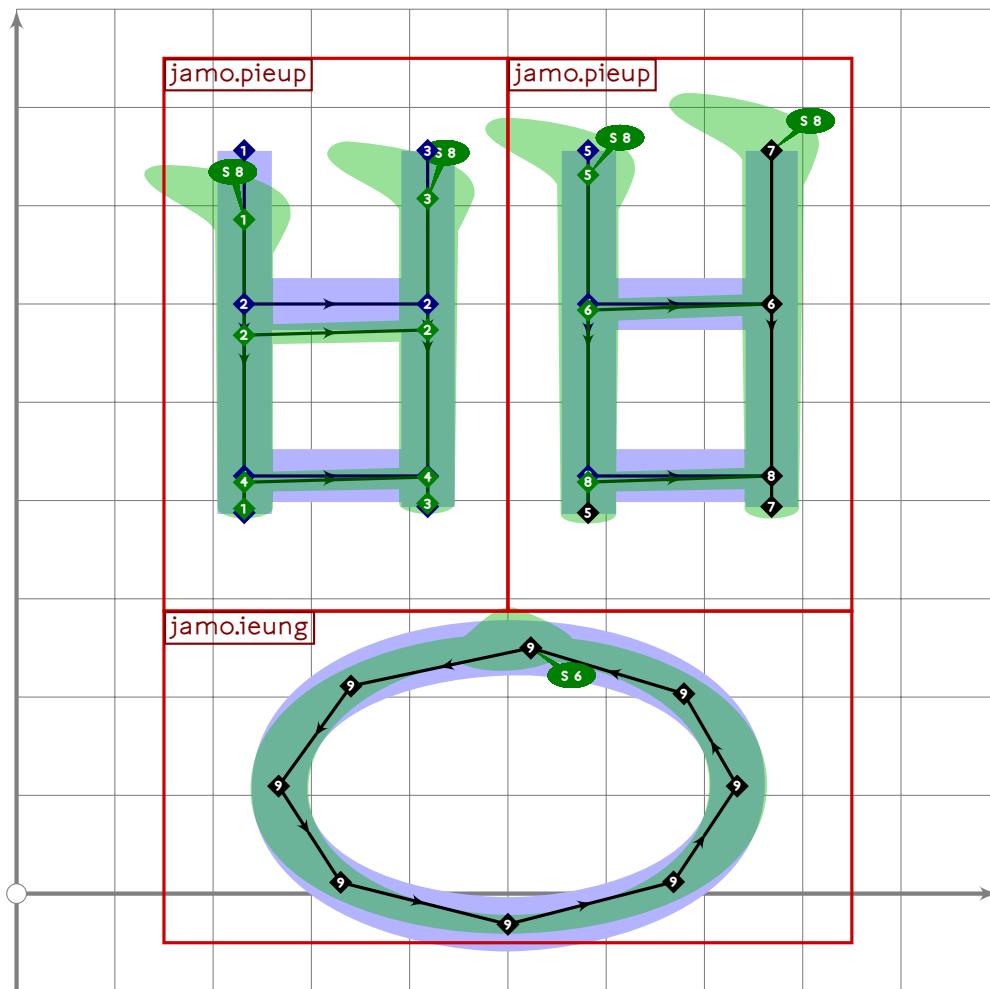
```



```

468 % hangul kapyeounpieup
469 beginsuglyph("uni3178";120);
470   hangul.combine.tb(107,521)(whatever,hxf((200,850),(800,-50)),identity);
471   tsu_render;
472 endsuglyph;
473

```

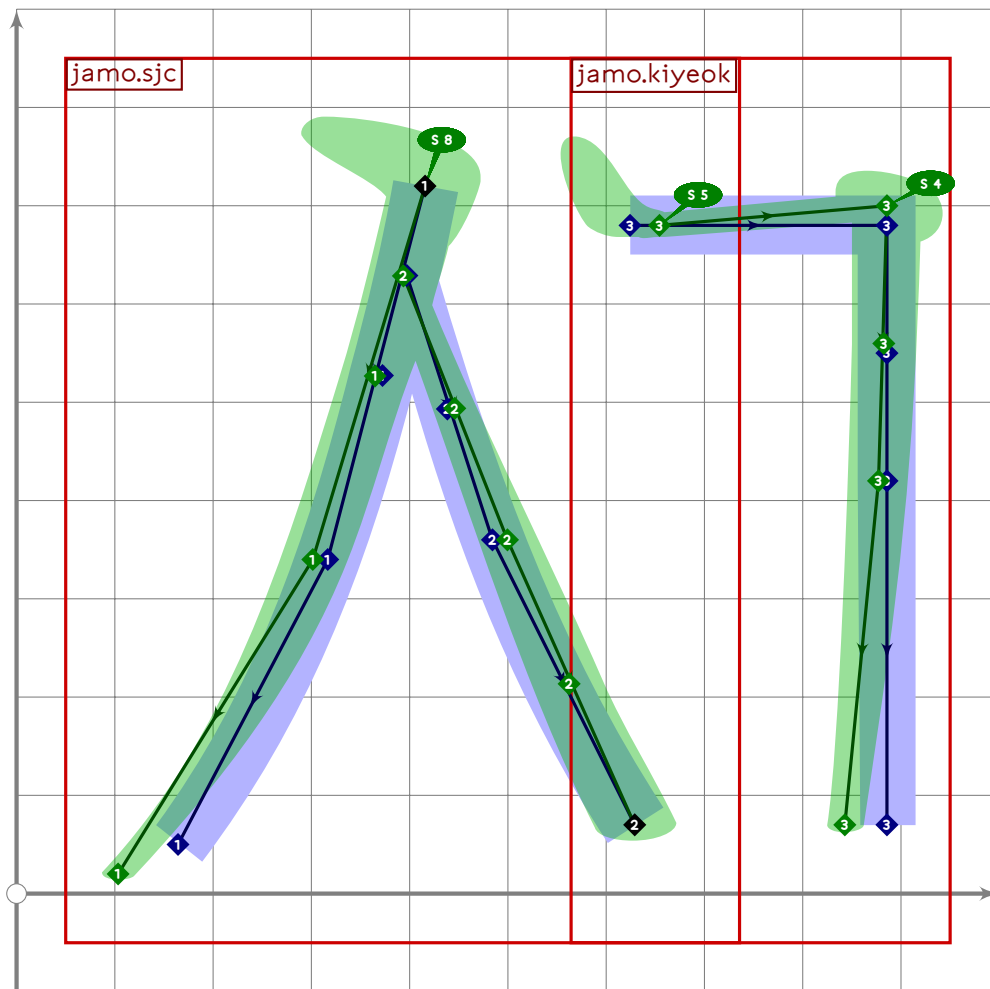


```

474 % hangul kapyeounssangpieup
475 begintsuglyph("uni3179";121);
476 hangul.combine.tb(108,521)(whatever,hxf((150,850),(850,-50)),identity);
477 tsu_render;
478 endtsuglyph;
479

```

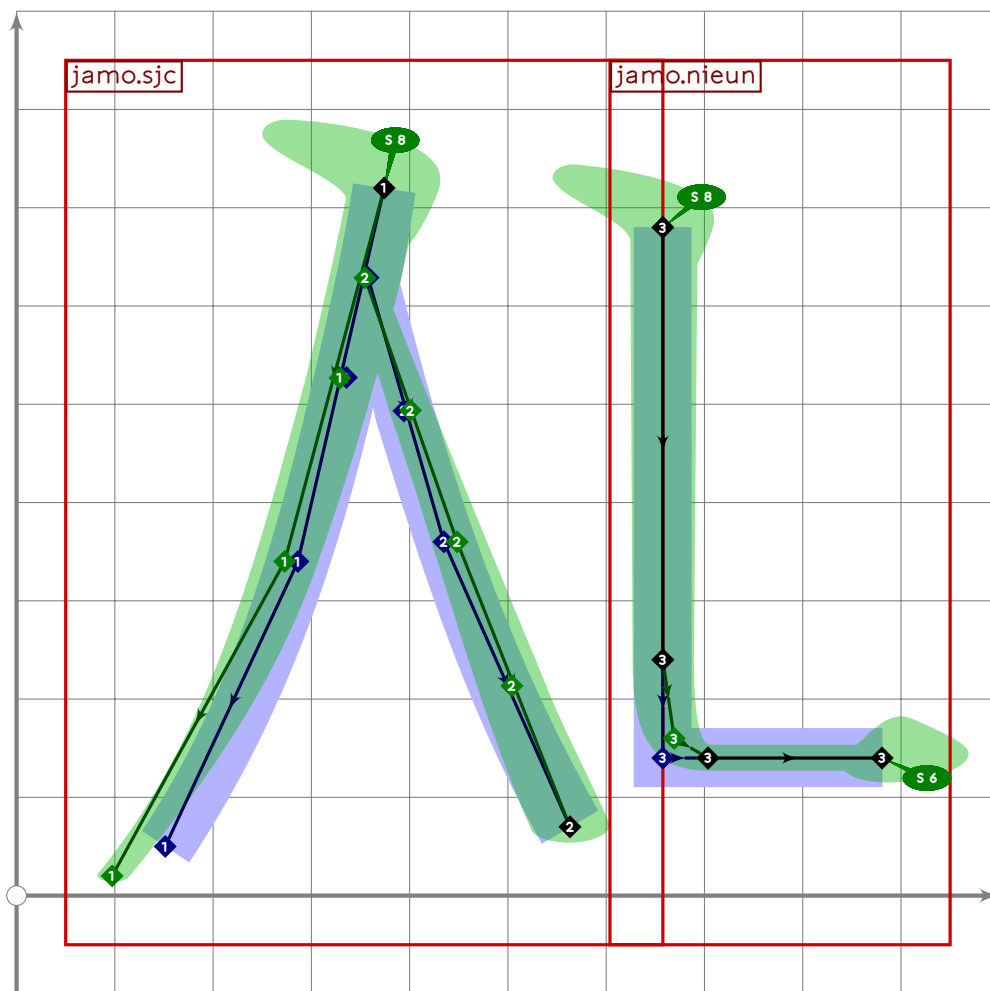
U+317A
mande.uni317A



```

480 % hangul sios-kiyeok
481 begint Suglyph("uni317A";122);
482   hangul.combine.lr(109,100)(whatever;identity,identity);
483   tsu_render;
484 endtsuglyph;
485

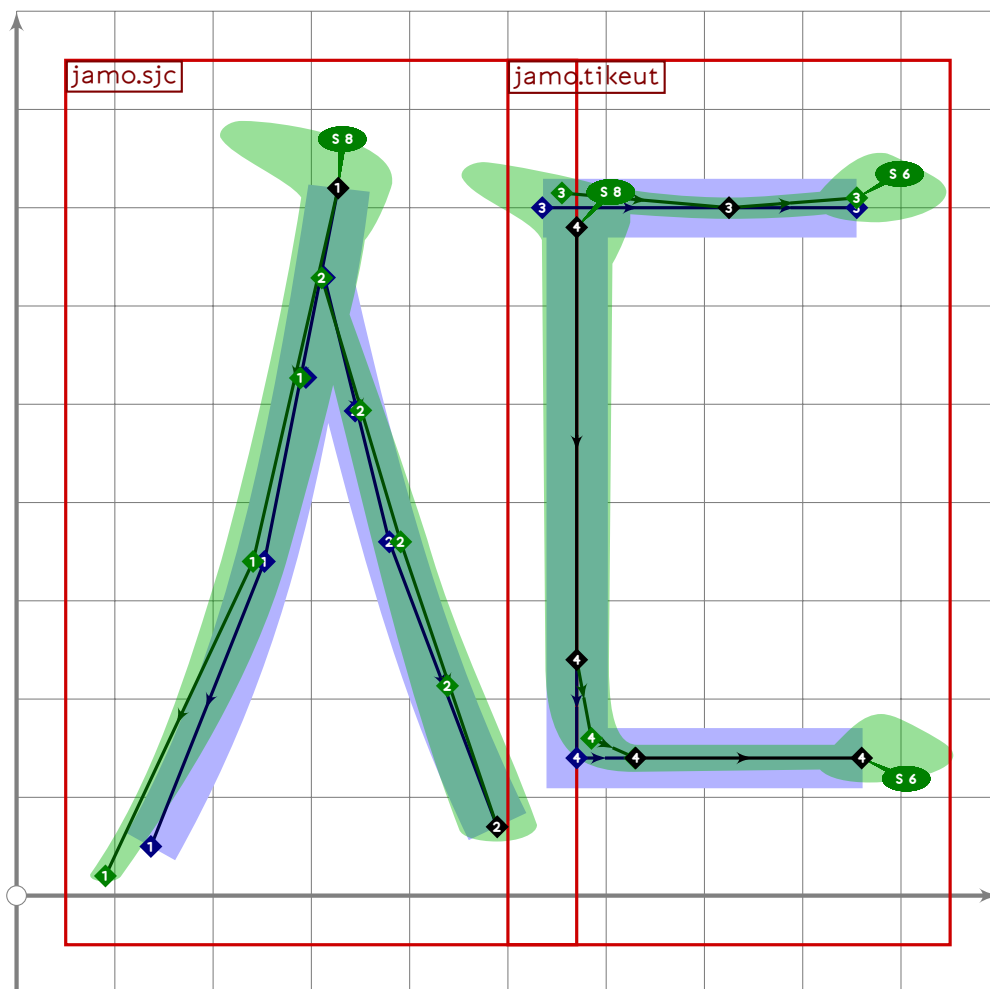
```



```

486 % hangul sios-nieun
487 begintsuglyph("uni317B";123);
488 hangul.combine.lr(109;102)(whatever;identity,identity);
489 tsu_render;
490 endtsuglyph;
491

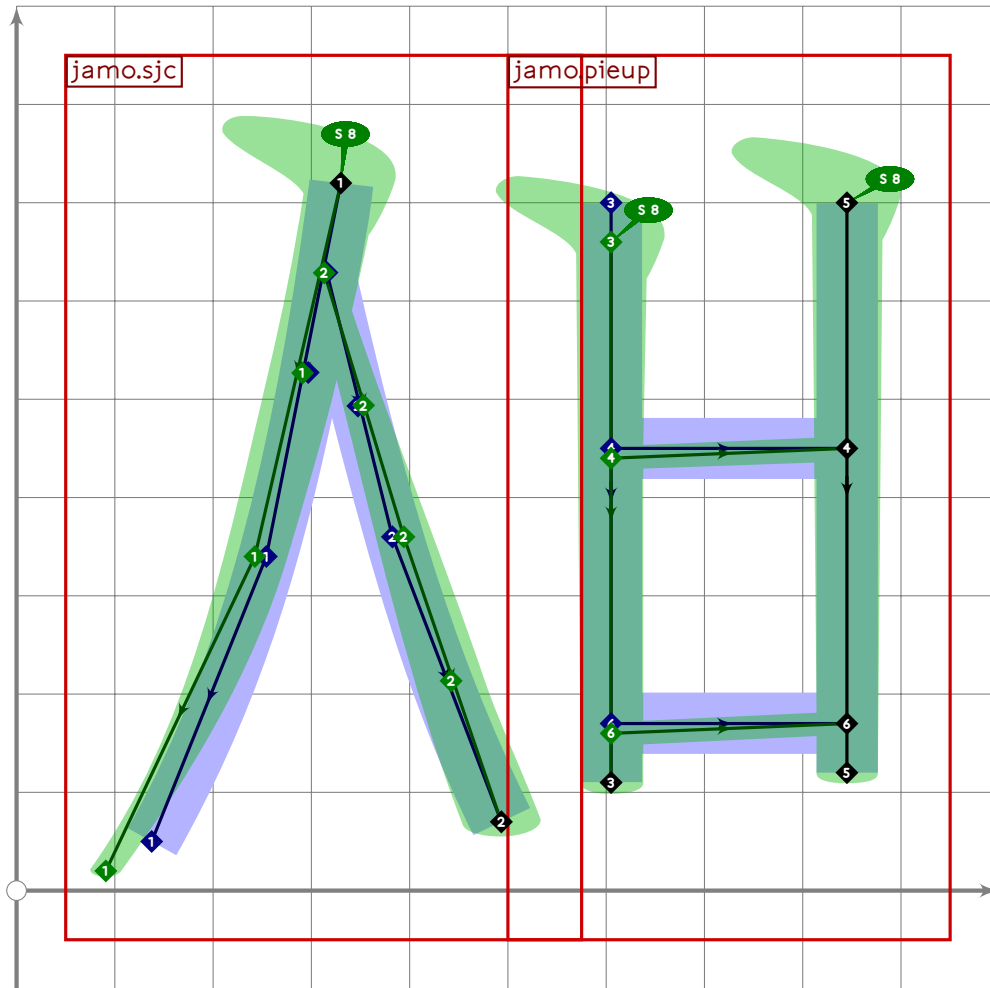
```



```

492 % hangul sios-tikeut
493 begintsuglyph("uni317C",124);
494   hangul.combine.lr(109,103)(whatever,identity,identity);
495   tsu_render;
496 endtsuglyph;
497

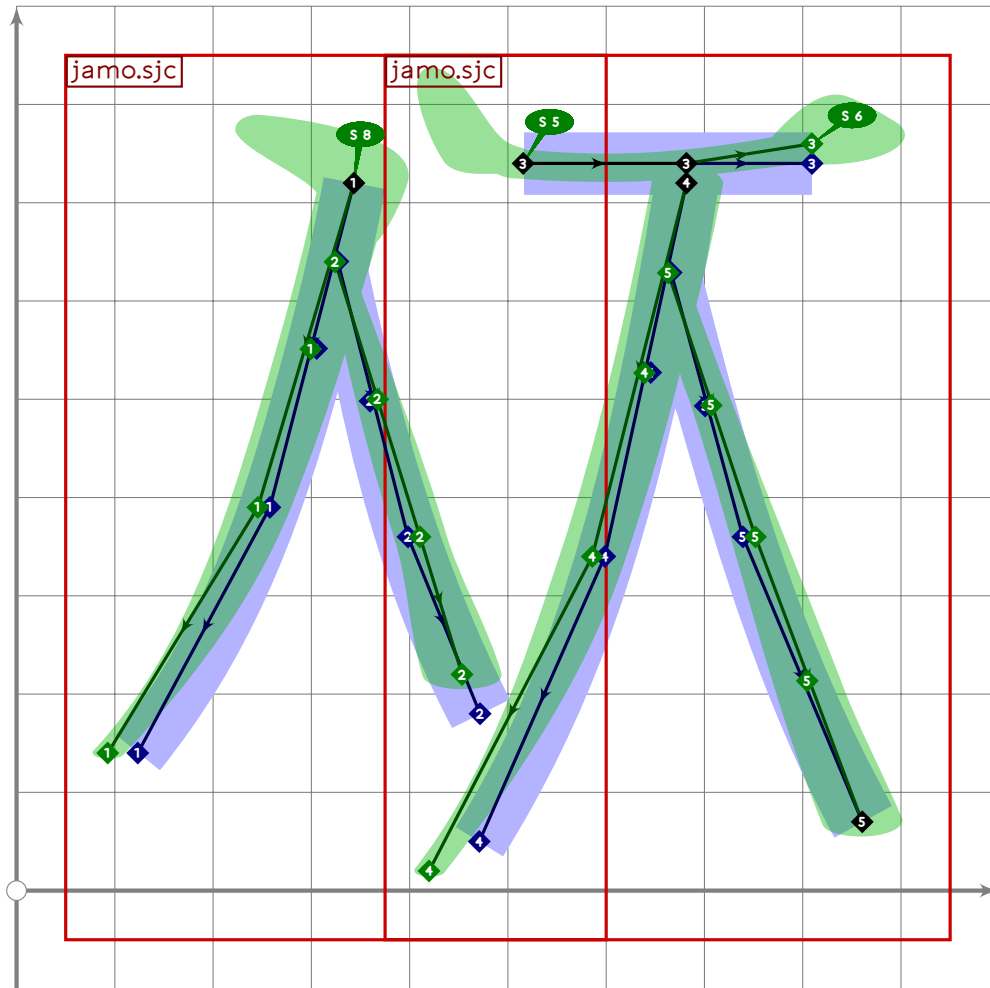
```



```

498 % hangul sios-pieup
499 begintsuglyph("uni317D",125);
500 hangul.combine.lr(109,107)(whatever;identity,identity);
501 tsu_render;
502 endtsuglyph;
503

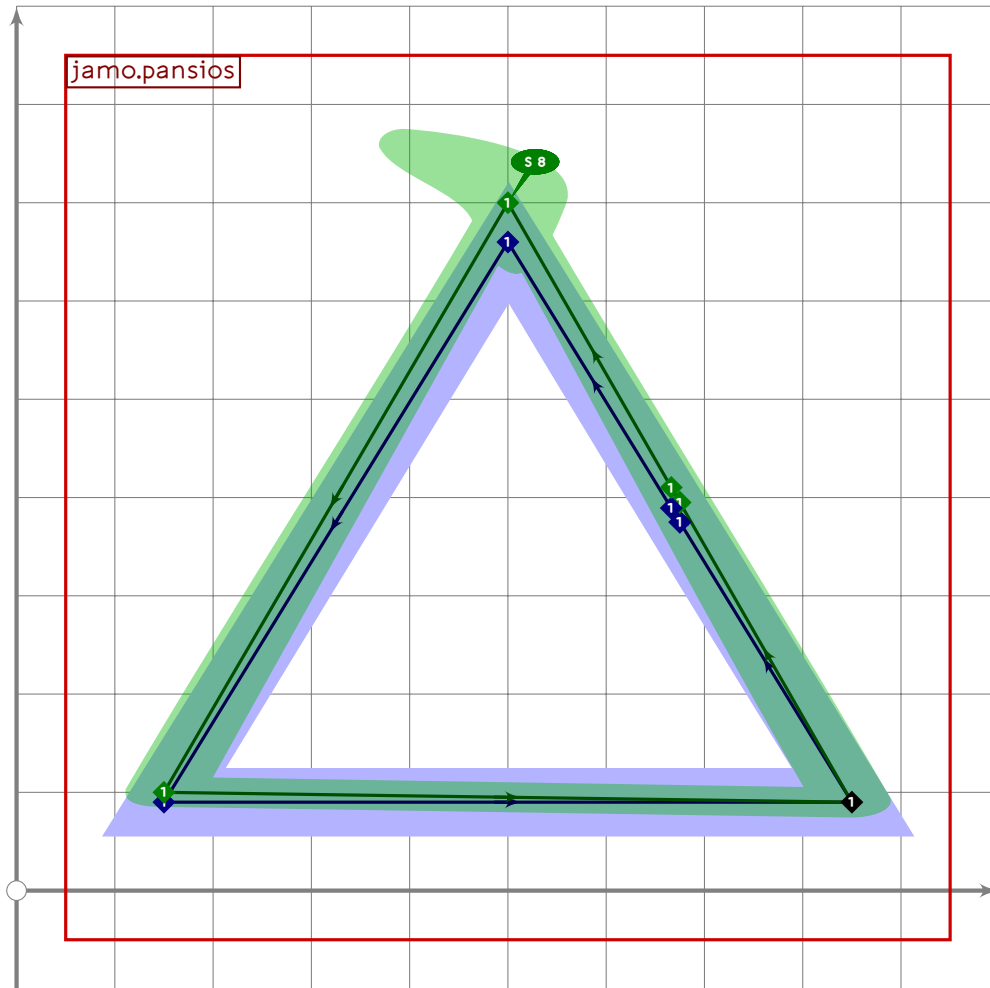
```



```

504 % hangul sios-cieuc
505 begintsuglyph("uni317E";126);
506   hangul.combine.lr(209;112)(whatever;identity,identity);
507   tsu_render;
508 endtsuglyph;
509

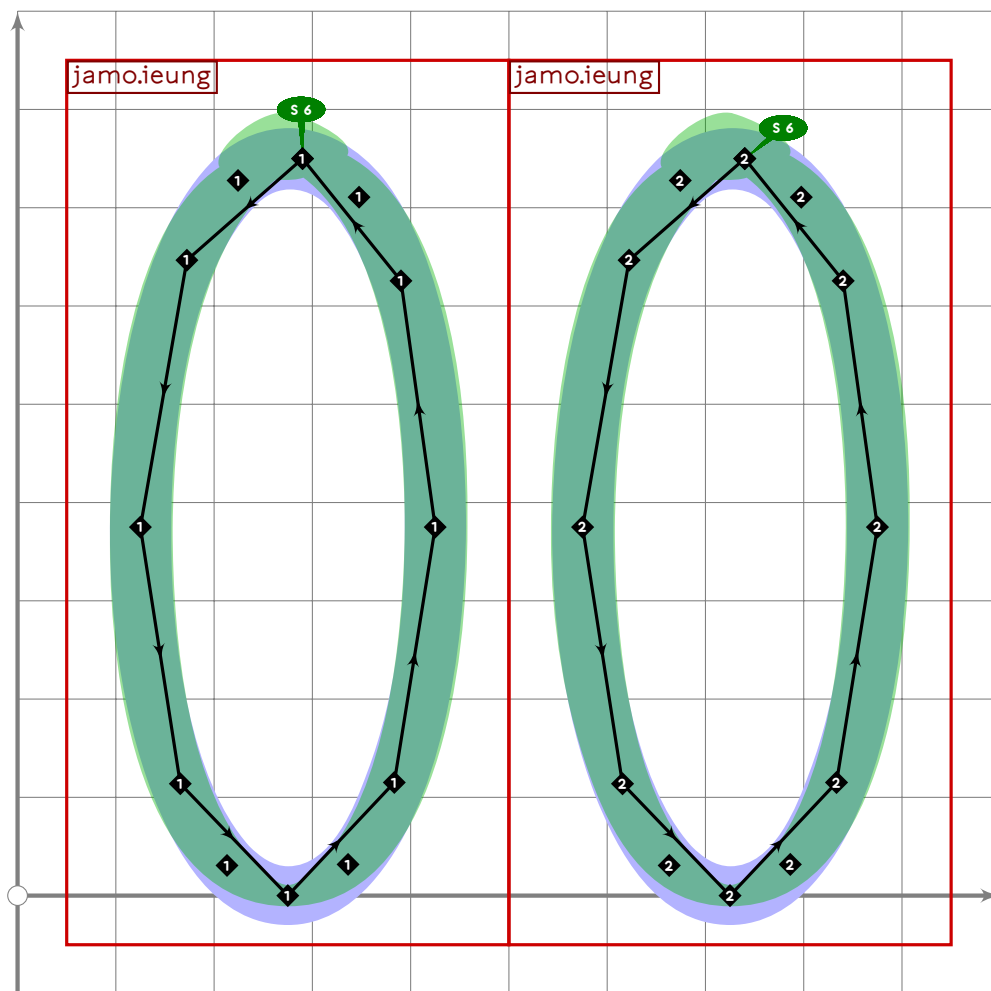
```

```

510 % hangul pansios
511 begint Suglyph("uni317F";127);
512   hangul.jamo.pansios(whatever;identity,identity);
513   tsu_render;
514 endtsuglyph;
515

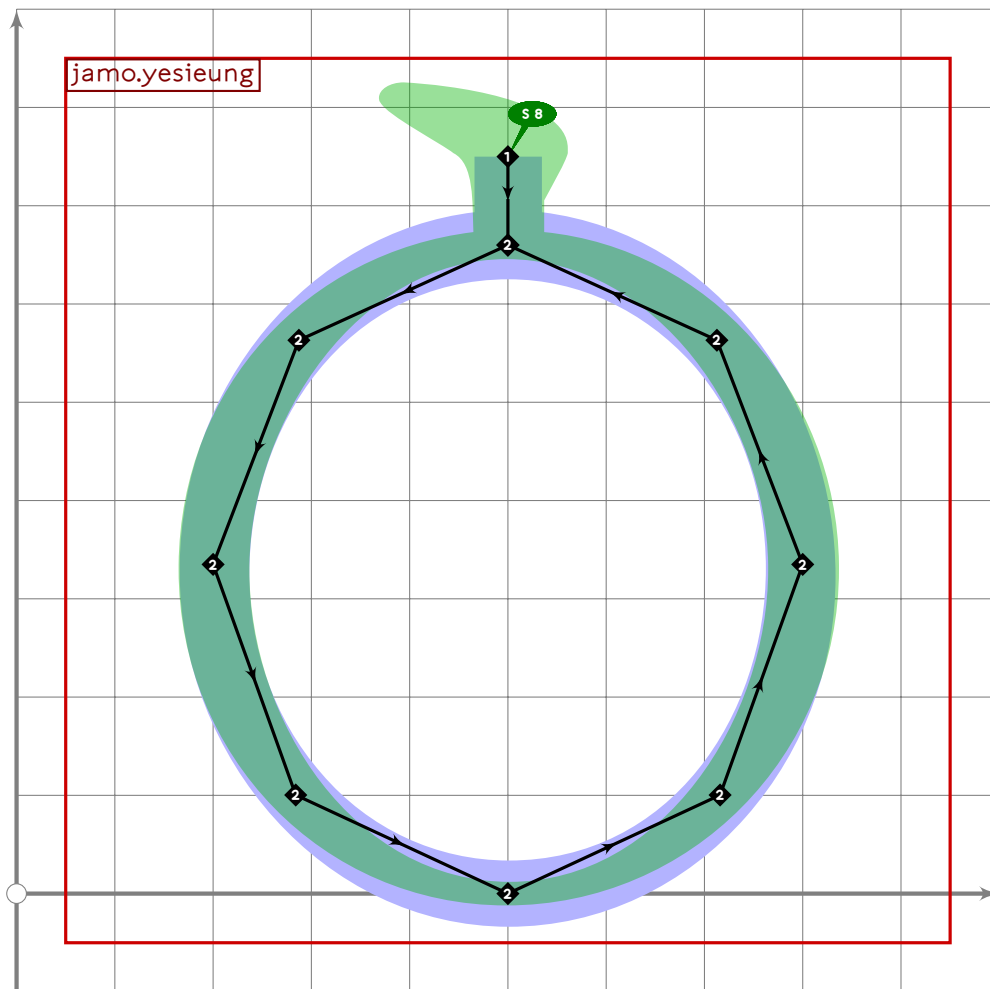
```



```

516 % hangul ssangieung
517 begintsuglyph("uni3180",128);
518   hangul.combine.lr(111,111)(whatever,identity,identity);
519   tsu_render;
520 endsuglyph;
521

```

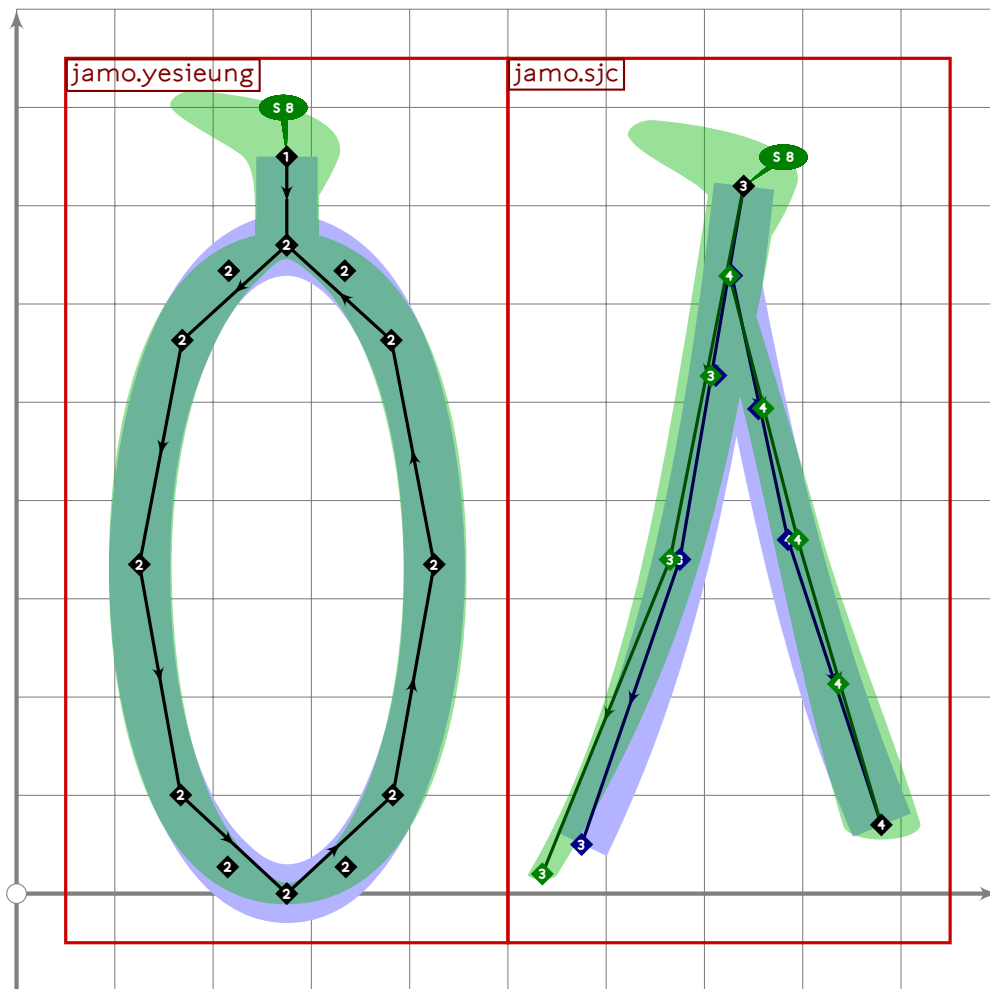


```

522 % hangul yesieung
523 beginsuglyph("uni3181",129);
524   hangul.jamo.yesieung(whatever;identity,identity);
525   tsu_render;
526 endtsuglyph;
527

```

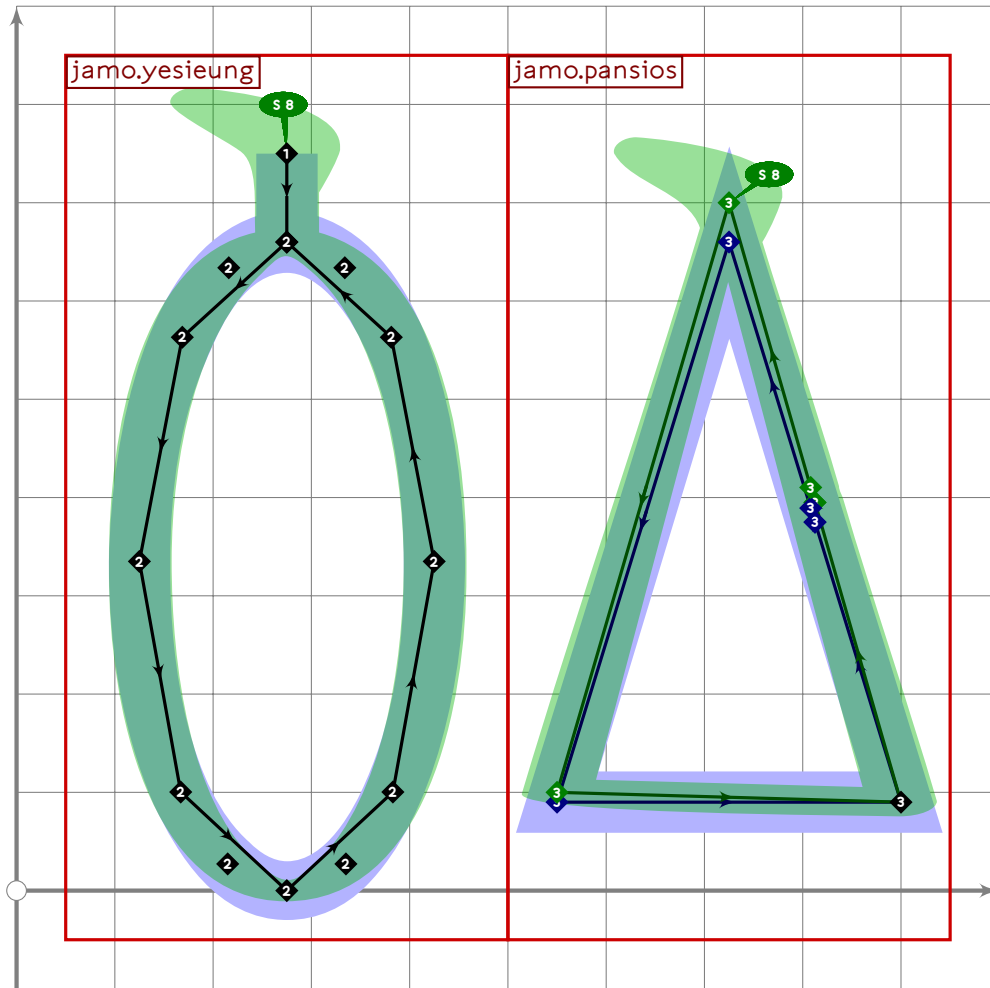
U+3182
mande.uni3182



```

528 % hangul yesieung-sios
529 beginsuglyph("uni3182",130);
530 hangul.combine.lr(220,109)(whatever,identity,identity);
531 tsu_render;
532 endsuglyph;
533

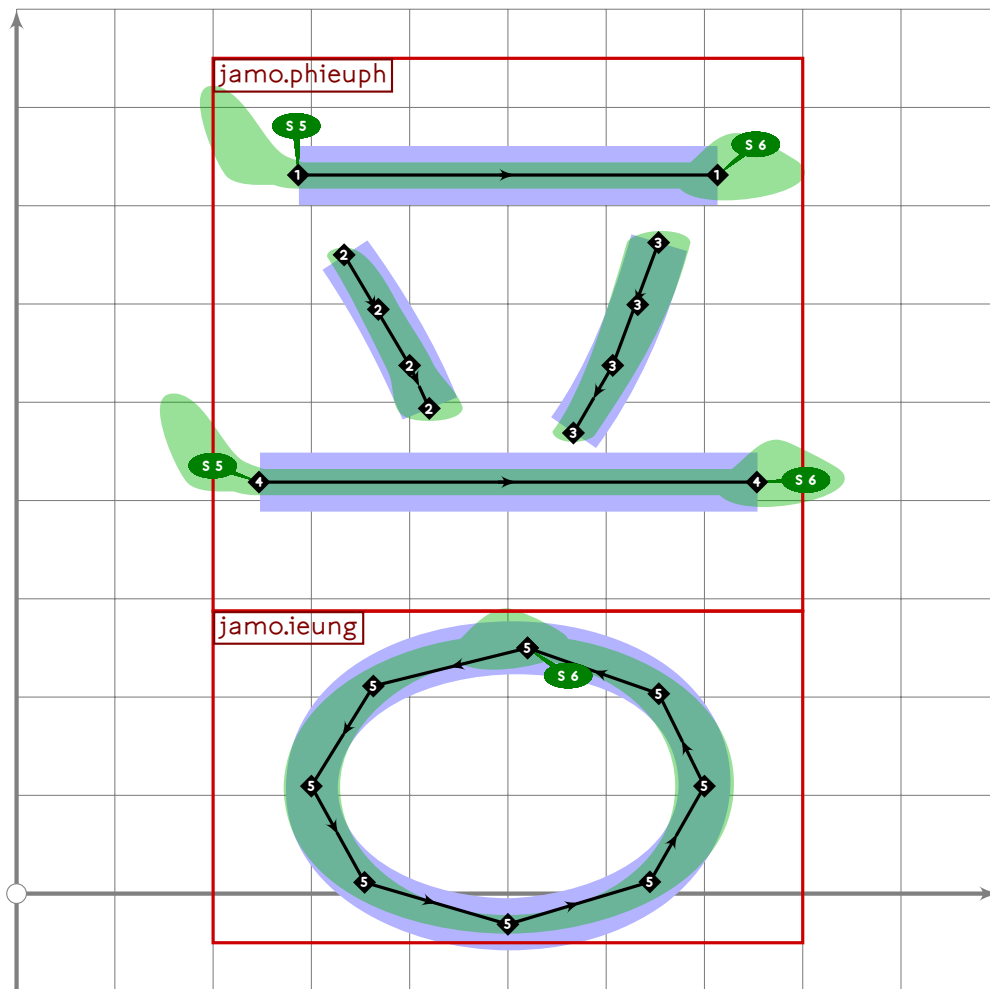
```



```

534 % hangul yesieung-pansios
535 beginsuglyph("uni3183",131);
536 hangul.combine.lr(220,219)(whatever,identity,identity);
537 tsu_render;
538 endsuglyph;
539

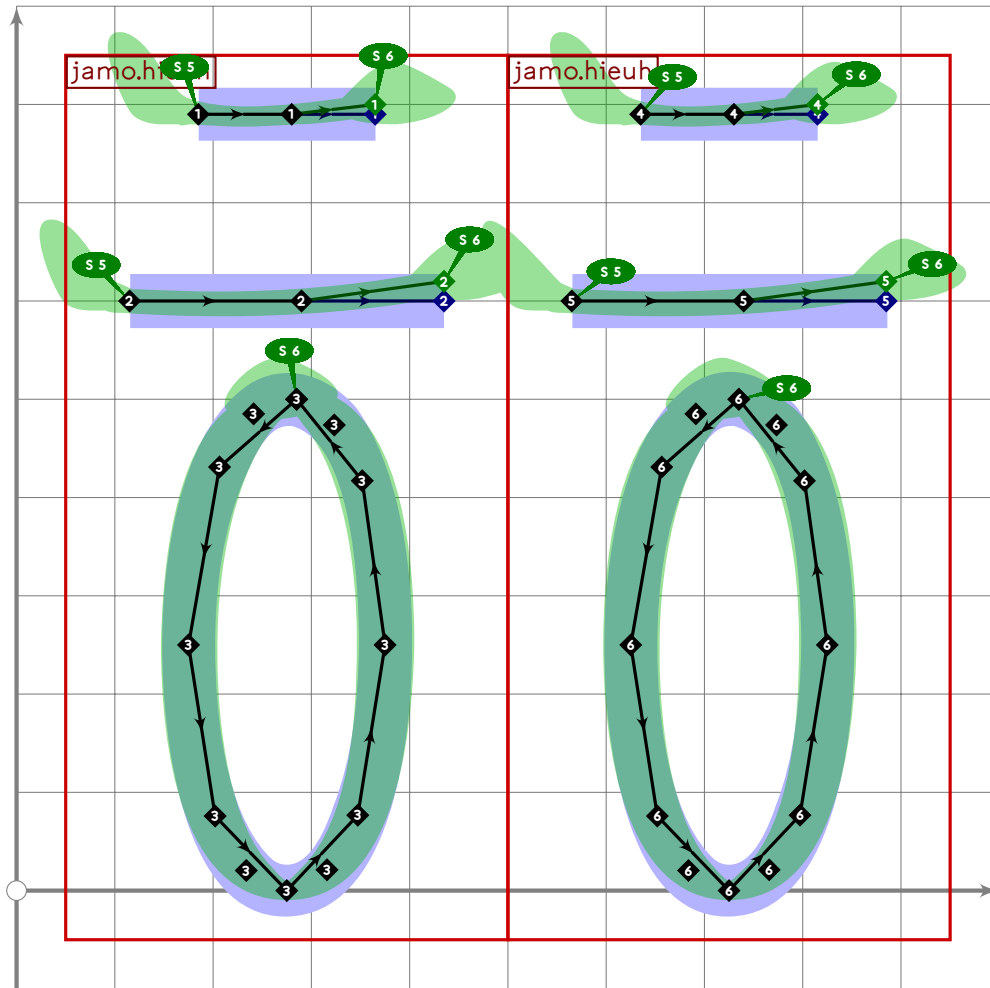
```



```

540 % hangul kapyeounphieuph
541 beginsuglyph("uni3184",132);
542   hangul.combine.tb(117,521)(whatever,hxf((200,850),(800,-50)),identity);
543   tsu_render;
544 endsuglyph;
545

```

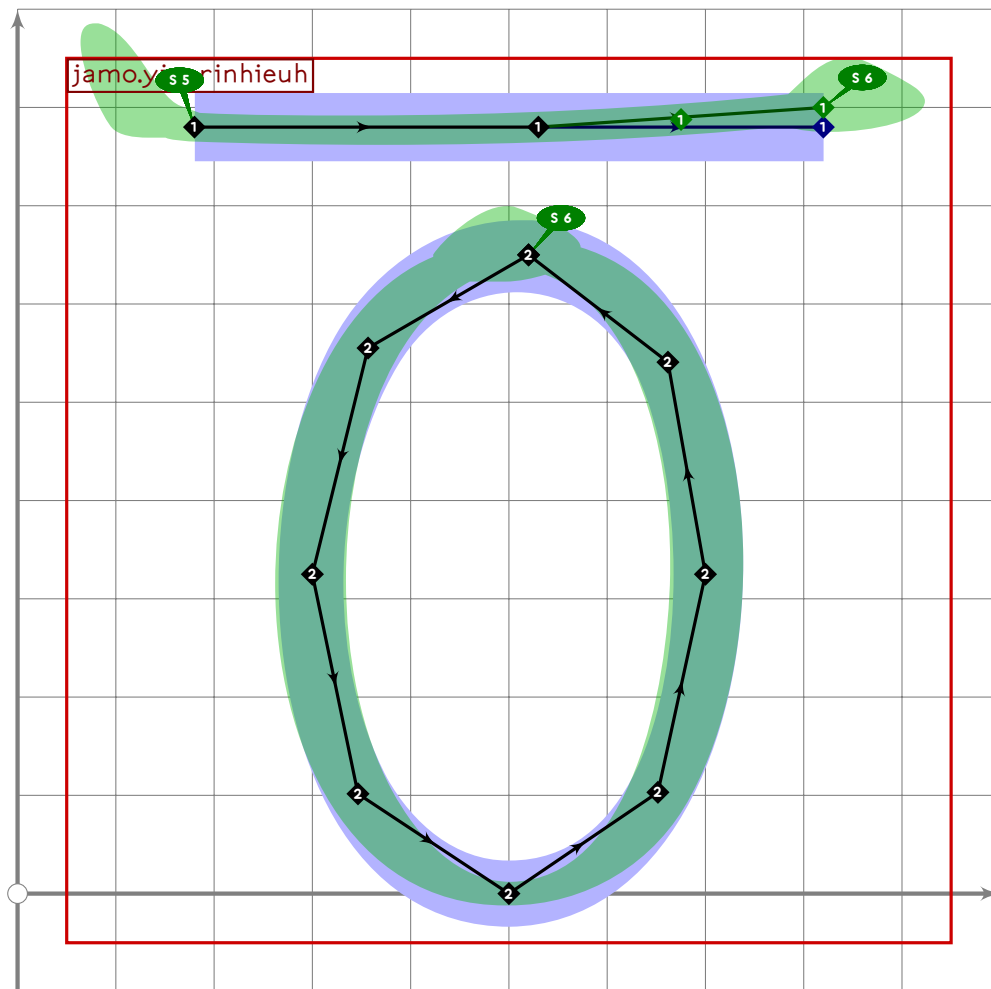


```

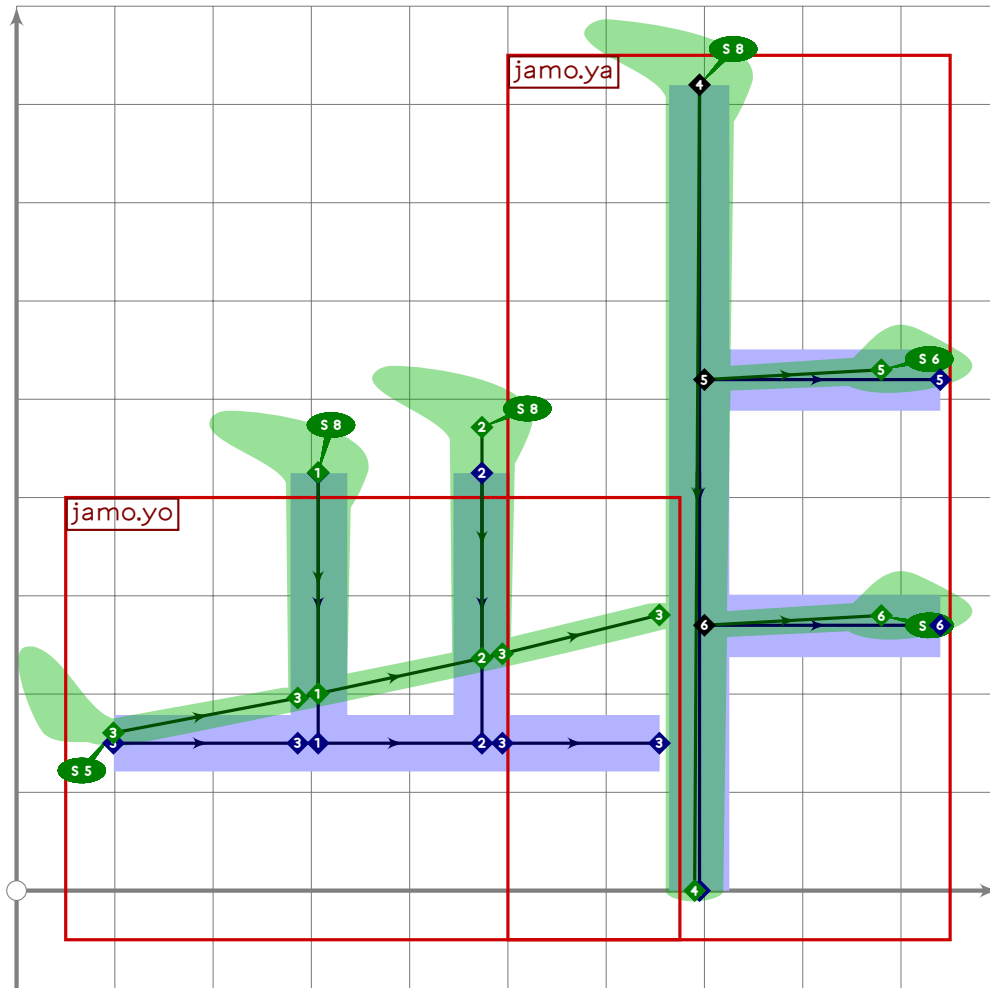
546 % hangul ssanghieuh
547 begintsuglyph("uni3185",133);
548 hangul.combine.lcr(118,230,118)(whatever,identity,identity);
549 tsu_render;
550 endtsuglyph;
551

```

U+3186
mande.uni3186



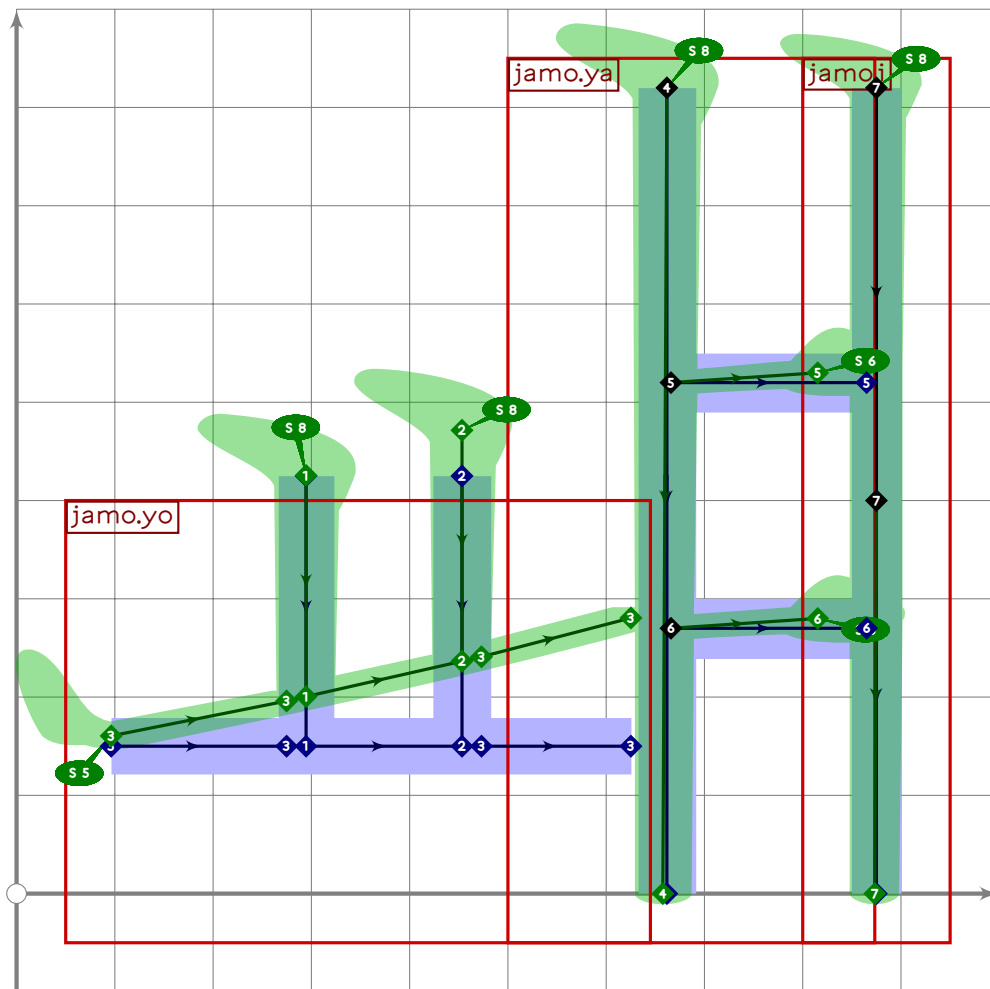
```
552 % hangul yeorinhieuh
553 beginsuglyph("uni3186",134);
554   hangul.jamo.yeorinhieuh(whatever,identity,identity);
555   tsu_render;
556 endsuglyph;
557
```

```

558 % hangul yo-ya
559 begintsuglyph("uni3187",135);
560 hangul.combine.lr(312,302)(421,hxf((500,400),(950,50)),identity);
561 tsu_render;
562 endtsuglyph;
563

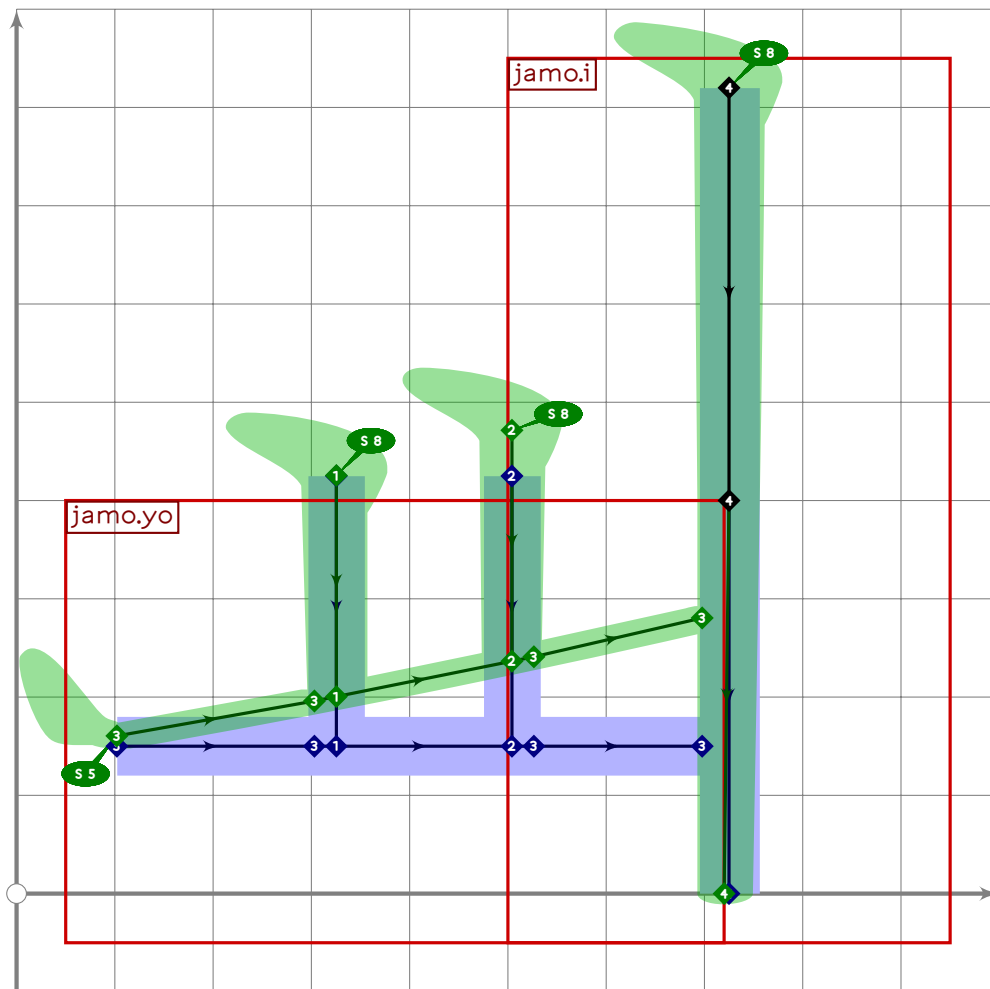
```



```

564 % hangul yo-yae
565 begintsuglyph("uni3188",136);
566   hangul.combine.lr(312,303)(422,hxf((500,400),(950,-50)),identity);
567   tsu_render;
568 endsuglyph;
569

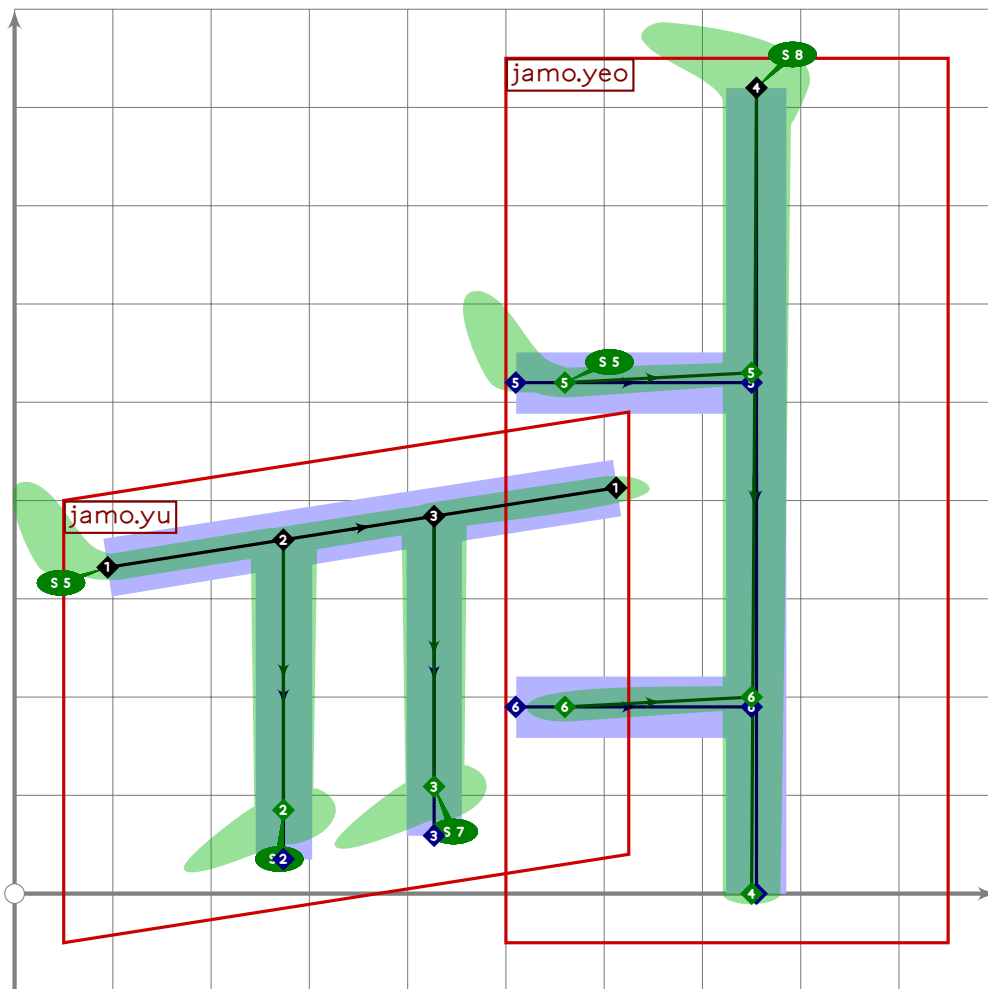
```



```

570 % hangul yo-i
571 begintsuglyph("uni3189",137);
572   hangul.combine.lr(312,320)(423,hxf((500,400),(950,-50)),identity);
573   tsu_render;
574 endtsuglyph;
575

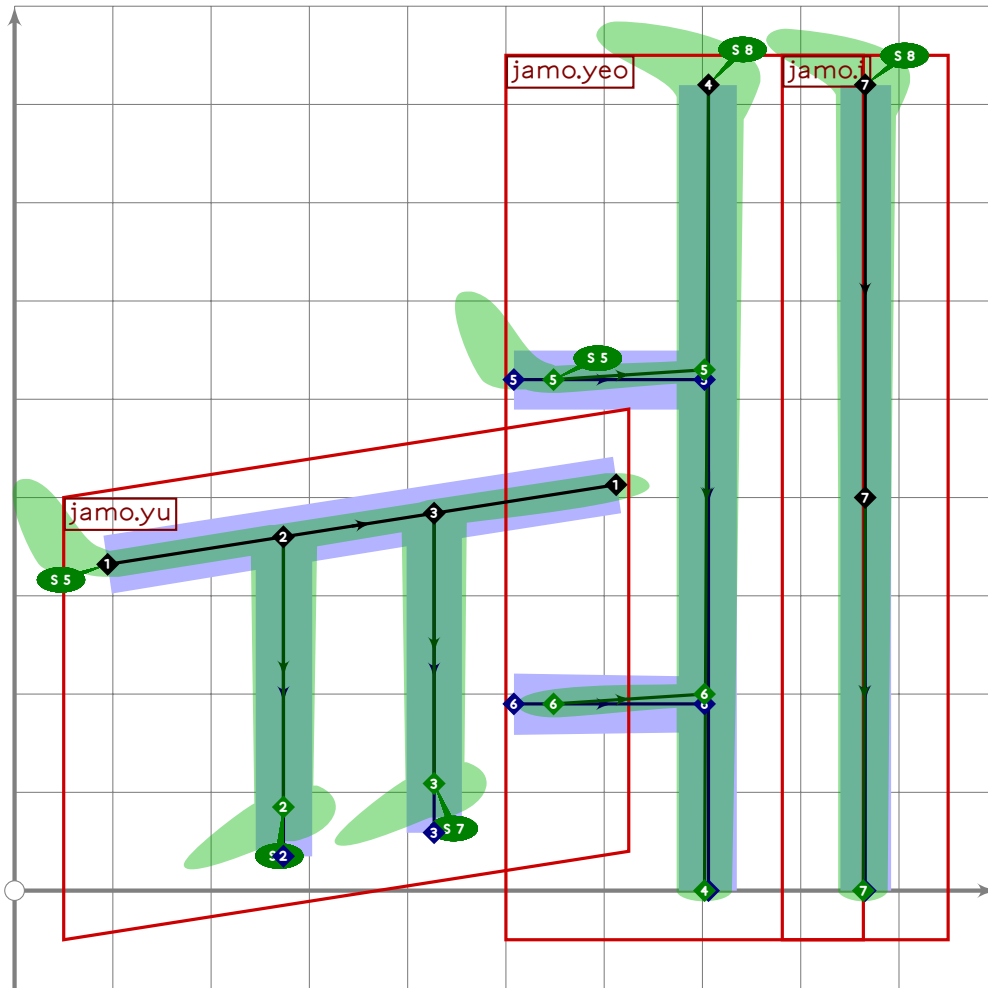
```



```

576 % hangul yu-yeo
577 begintsuglyph("uni318A",138);
578   hangul.combine.lr(317,306)(424,hxf((500,400),(950,50)),identity);
579   tsu_render;
580 endtsuglyph;
581

```

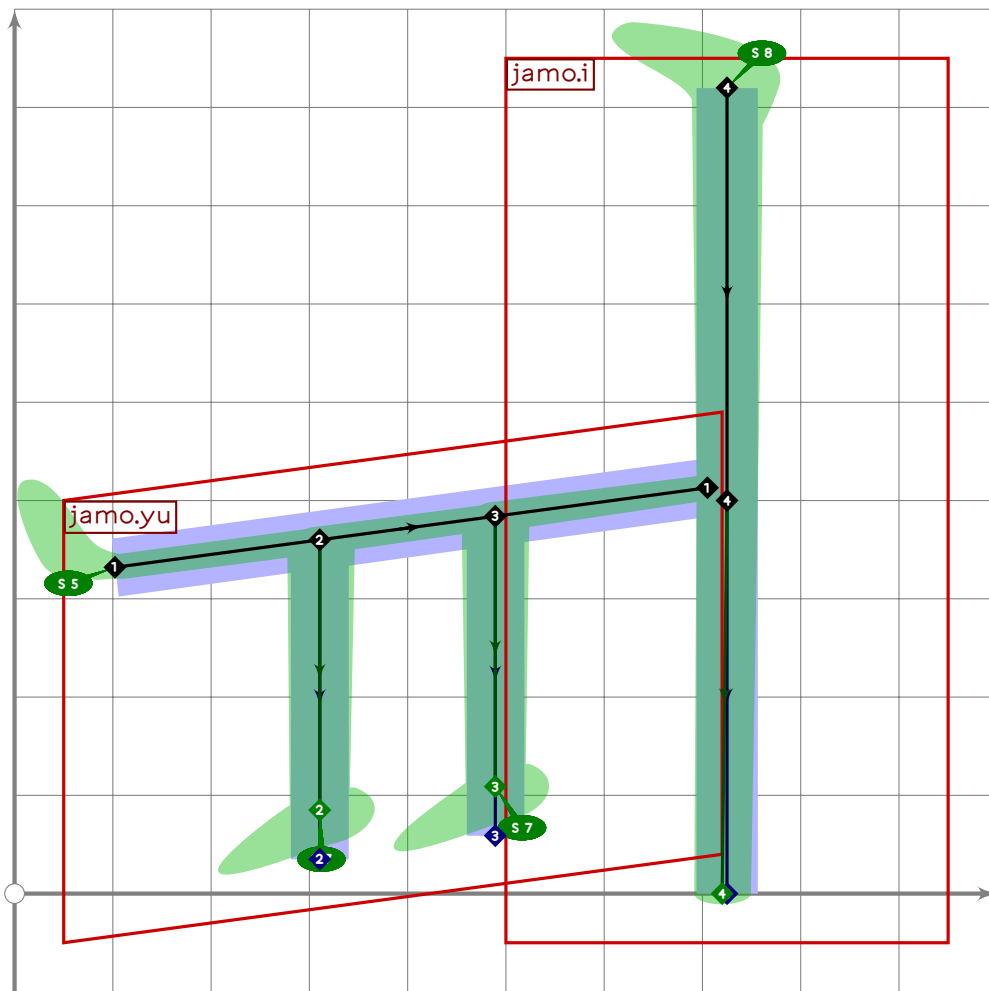


```

582 % hangul yu-ye
583 begintsuglyph("uni318B",139);
584   hangul.combine.lr(317,307)(425,hxf((500,400),(950,-50)),identity);
585   tsu_render;
586 endtsuglyph;
587

```

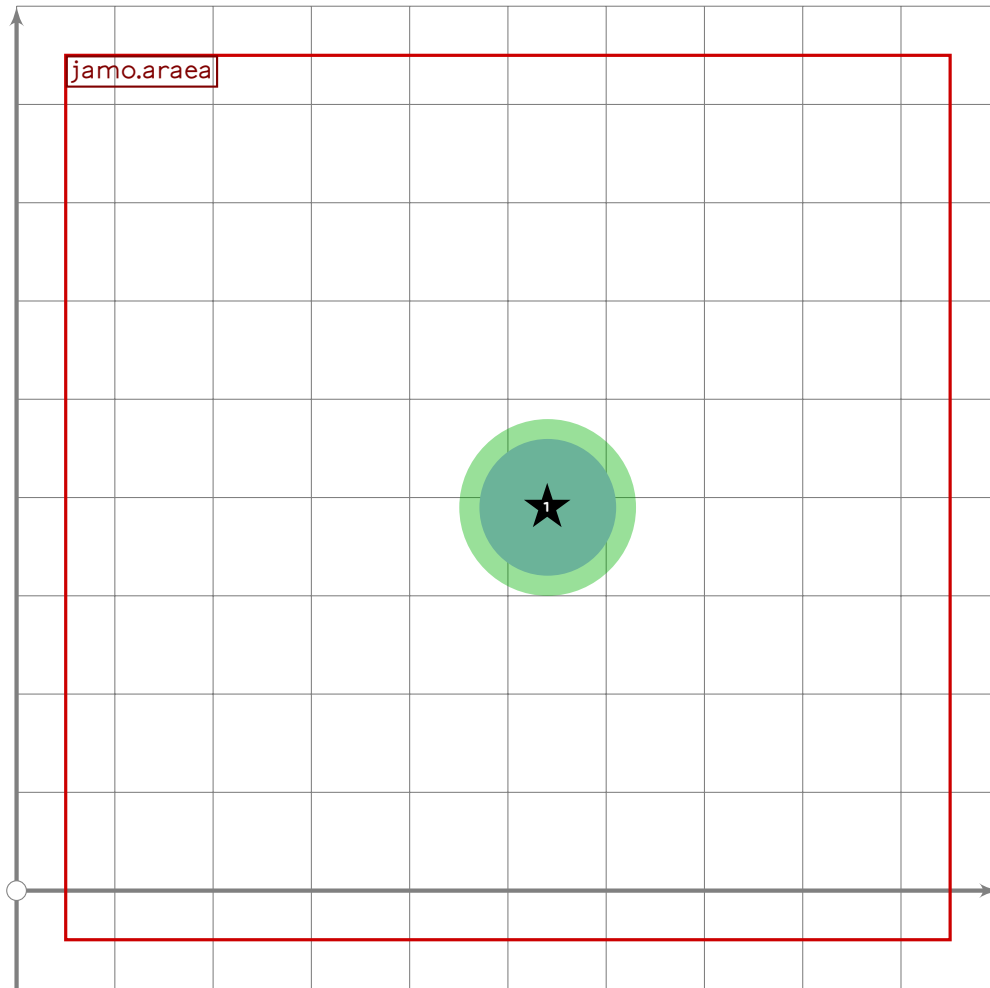
U+318C
mande.uni318C



```

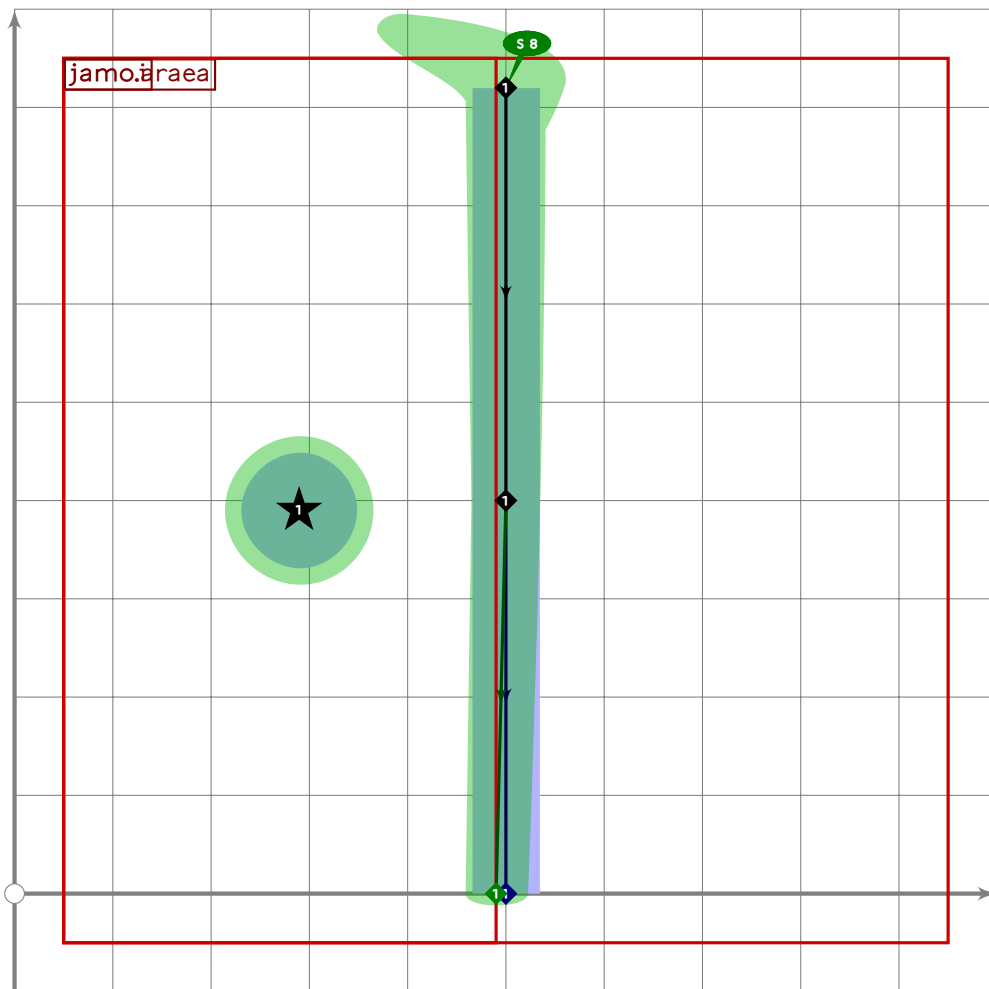
588 % hangul yu-i
589 begintsuglyph("uni318C",140);
590   hangul.combine.lr(317,320)(426,hxf((500,400),(950,50)),identity);
591   tsu_render;
592 endtsuglyph;
593

```



```
594 % hangul araea
595 beginsuglyph("uni318D",141);
596   hangul.jamo.araea(428,identity,identity);
597   tsu_render;
598 endsuglyph;
599
```

U+318E
mande.uni318E



```

600 % hangul araeae
601 begintsuglyph("uni318E",142);
602   hangul.combine.lr(428,320)(427;identity,identity);
603   tsu__render;
604 endtsuglyph;
605
606 

---


607
608 endfont;
609
610 

---



```


mande-a9.mp

```
1 %
2 % Unicode page A9 (Hangul Jamo Extended A) for Mandeubsida
3 % Copyright (C) 2012, 2013 Matthew Skala
4 %
5-29 [Standard copyright notice]
30
31 

---


32
33 beginfont
34
35 % AUTODEPS
36 input hangul.mp;
37
38 % non-auto dependencies
39 input jamo-basic.mp;
40 input jamo-extra.mp;
41
42 do_late_includes;
43
44 

---


45
46 % This file covers the basic layout (layout 0): a lead, a vowel that may
47 % go both vertically and horizontally, and a non-empty tail. All jamo are
48 % defined for this layout. Other files (in private-use plane 15) define
49 % versions of some jamo for other layouts; the idea is that the jamo here
50 % are defaults, and an OpenType feature can substitute the others (or entire
51 % precomposed syllables) to improve the layout where applicable.
52
53 transform lixf,loxf,vixf,tvixf,voxf,tixf,toxf;
54
55 lixf=loxf=hxf((50,850),(700,525));
56 vixf=hxf((700,475),(950,250));
57 tvixf=hxf((700,535),(950,240));
58 voxf=hxf((50,850),(950,250));
59 tixf=hxf((100+20*mincho,275),(900-20*mincho,-50)) shifted (-1000,0);
60 toxf=hxf((50,275),(950,-50)) shifted (-1000,0);
61
62 

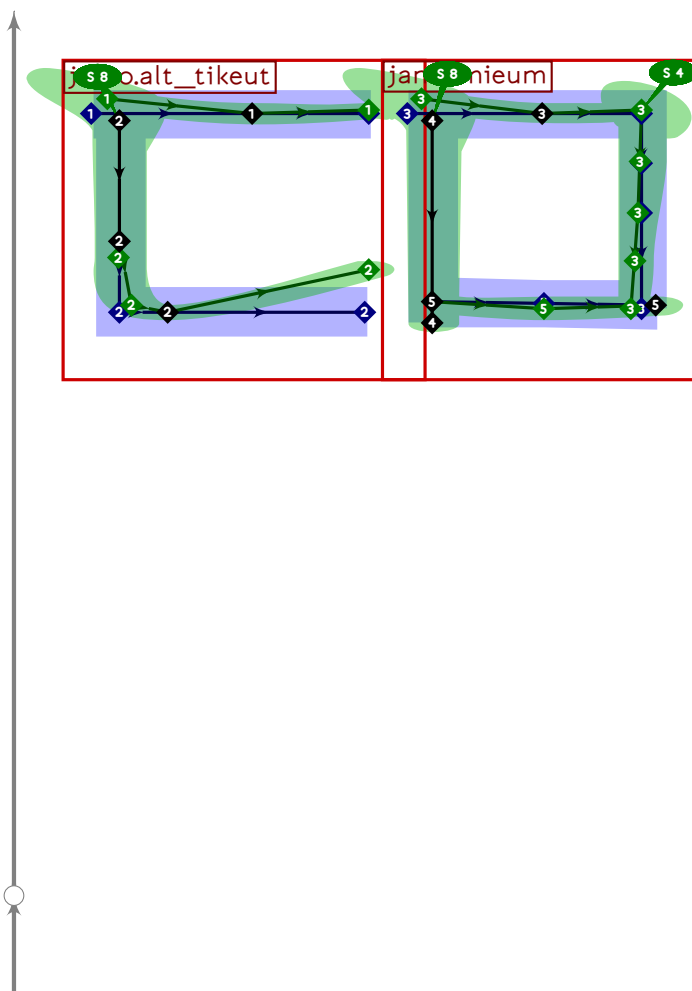
---


63
```

Hangul Choseong (Lead) Jamo Extended A

```
64 % HANGUL CHOSEONG (LEAD) JAMO EXTENDED A
65
66 tsu_rescale_native_zero;
67
```

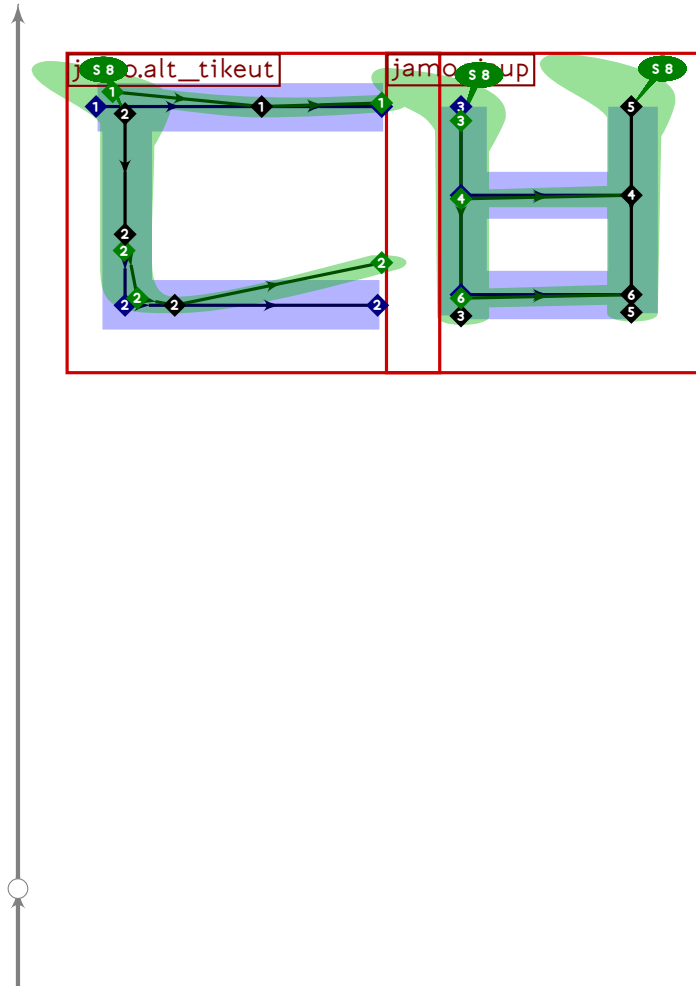
U+A960
mande.uniA960



```

68 % hangul lead tikeut-mieum
69 begintsuglyph("uniA960",96);
70   hangul.combine.lr(203,106)(whatever,lixf,loxf);
71   tsu__render;
72 endtsuglyph;
73

```

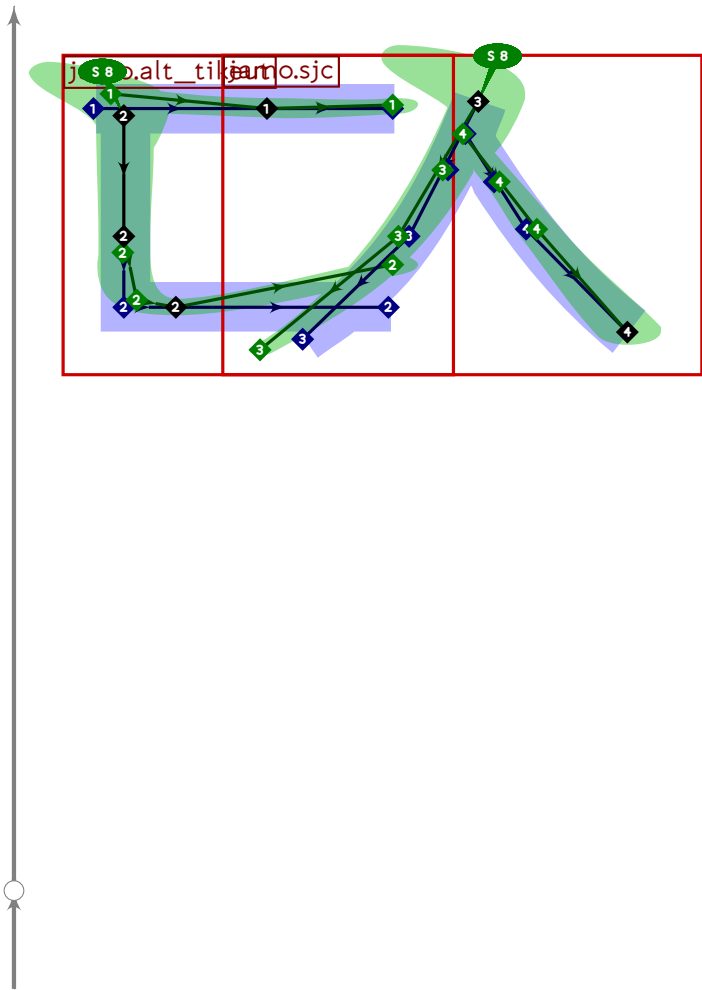


```

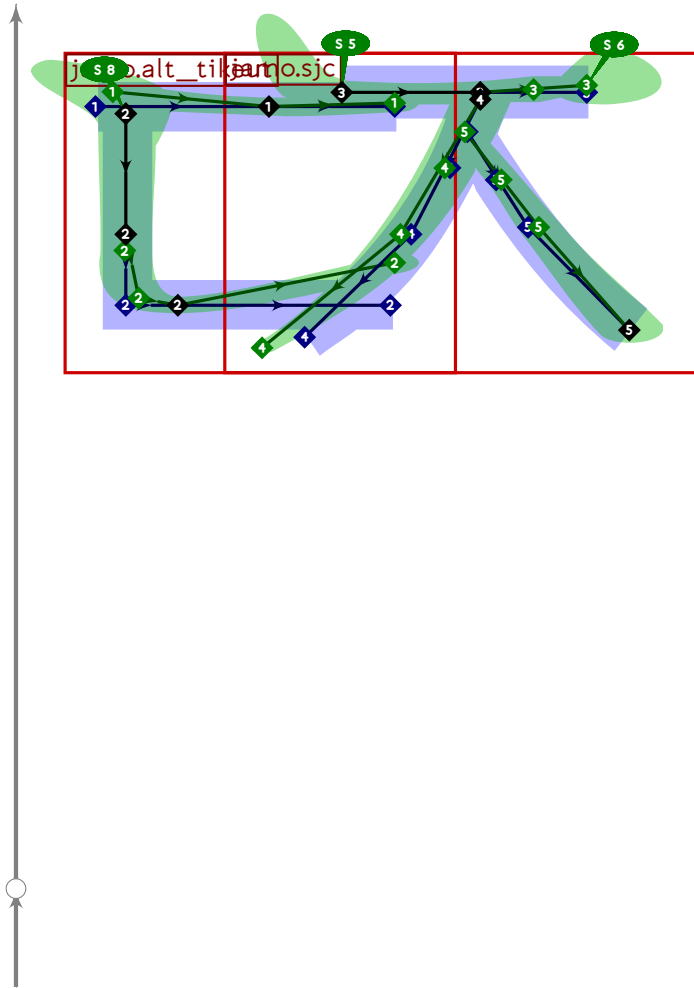
74 % hangul lead tikeut-pieup
75 begintsuglyph("uniA961";97);
76   hangul.combine.lr(203,107)(whatever,lixf,loxf);
77   tsu_render;
78 endtsuglyph;
79

```

U+A962
mande.uniA962



```
80 % hangul lead tikeut-sios
81 begintsuglyph("uniA962",98);
82   hangul.combine.lr(203,109)(whatever,lixf,loxf);
83   tsu_render;
84 endtsuglyph;
85
```

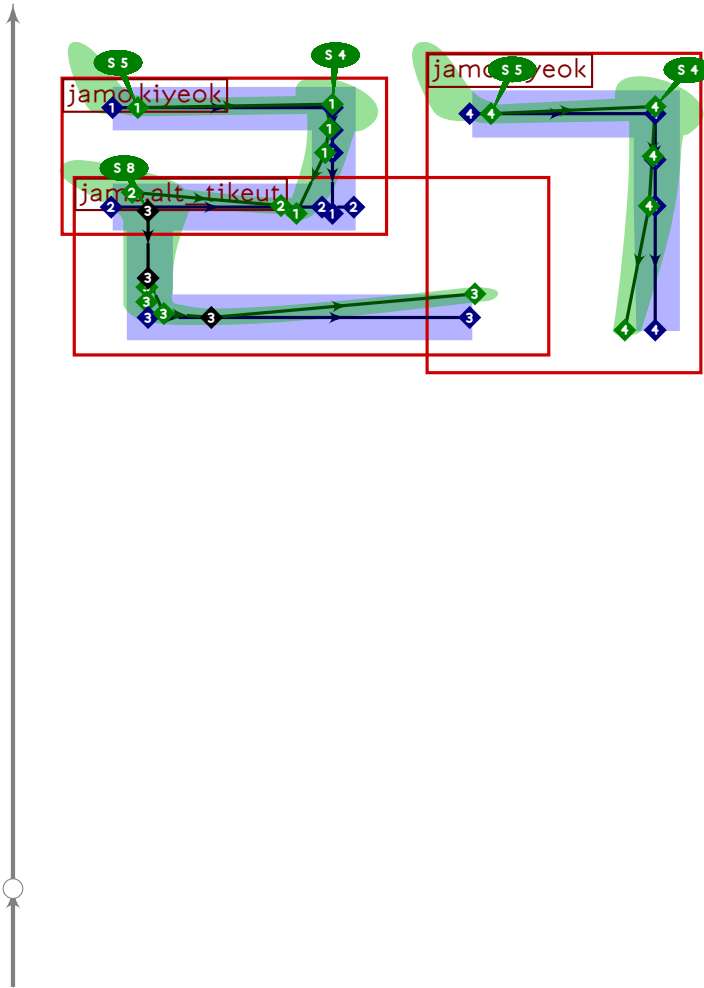


```

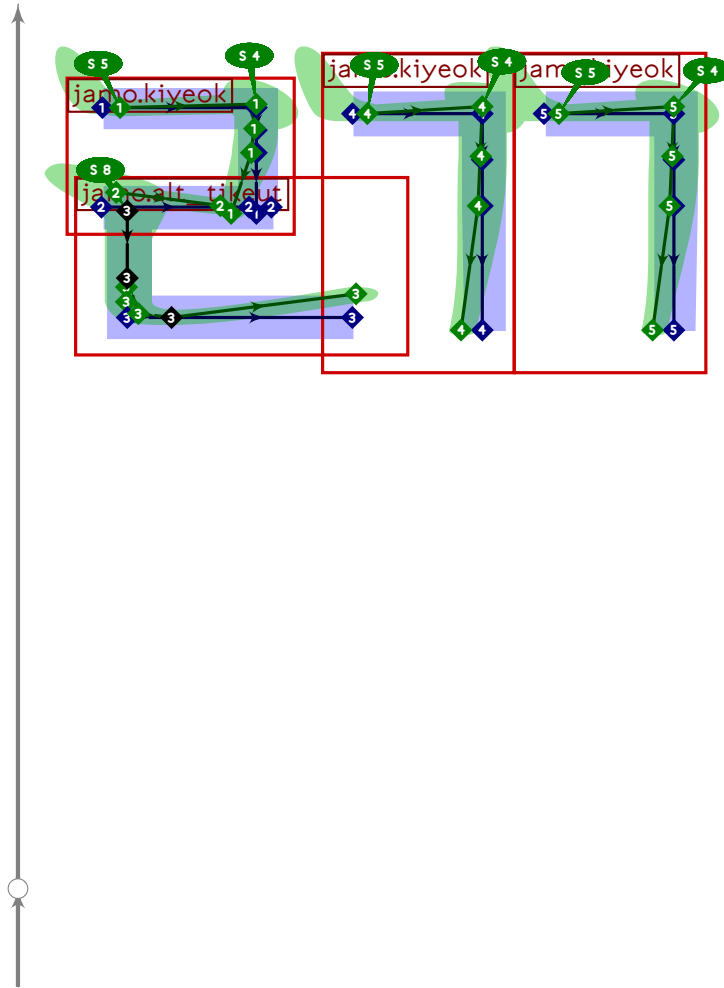
86 % hangul lead tikeut-cieuc
87 begintsuglyph("uniA963";99);
88   hangul.combine.lr(203,112)(whatever,lixf,loxf);
89   tsu_render;
90 endtsuglyph;
91

```

U+A964
mande.uniA964



```
92 % hangul lead rieul-kiyeok
93 begintsuglyph("uniA964",100);
94   hangul.combine.lr(205,100)(whatever,lixf,loxf);
95   tsu_render;
96 endtsuglyph;
97
```

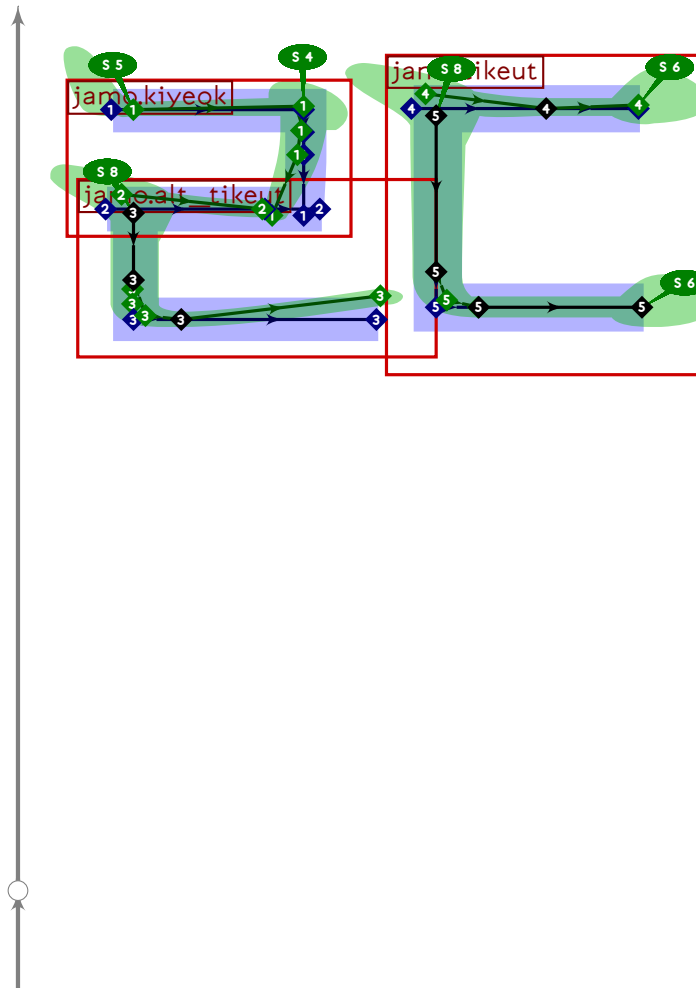


```

98 % hangul lead rieul-ssangkiyeok
99 begintsuglyph("uniA965",101);
100 hangul.combine.lcr(205,100,100)(whatever,lixf,loxf);
101 tsu_render;
102 endtsuglyph;
103

```

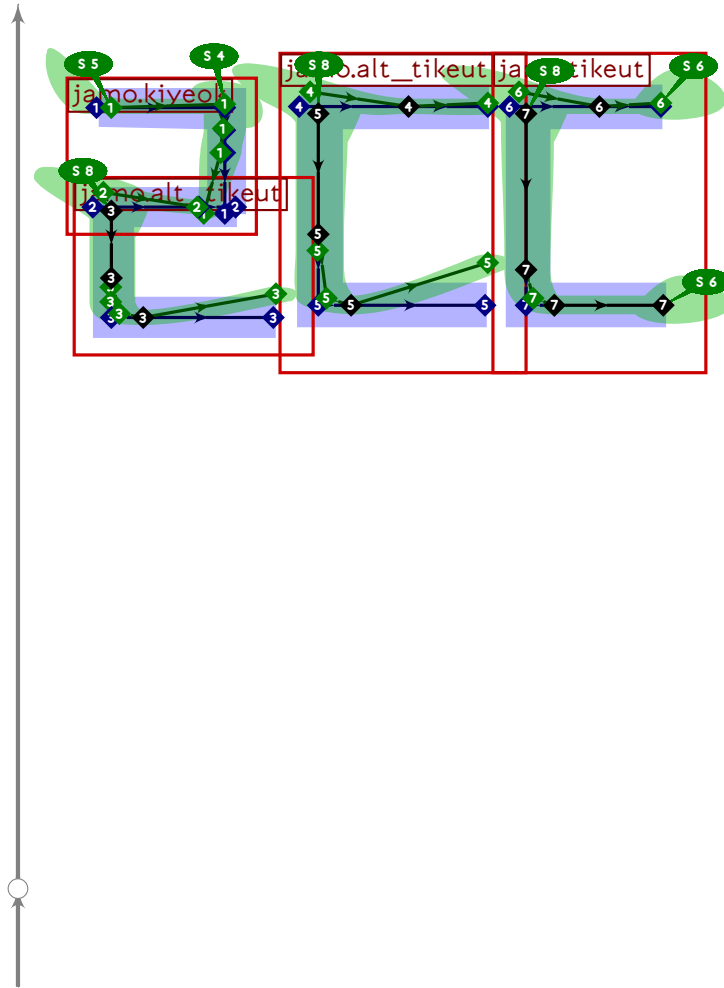
U+A966
mande.uniA966



```

104 % hangul lead rieul-tikeut
105 begintsuglyph("uniA966",102);
106   hangul.combine.lr(205,103)(whatever,lixf,loxf);
107   tsu_render;
108 endtsuglyph;
109

```

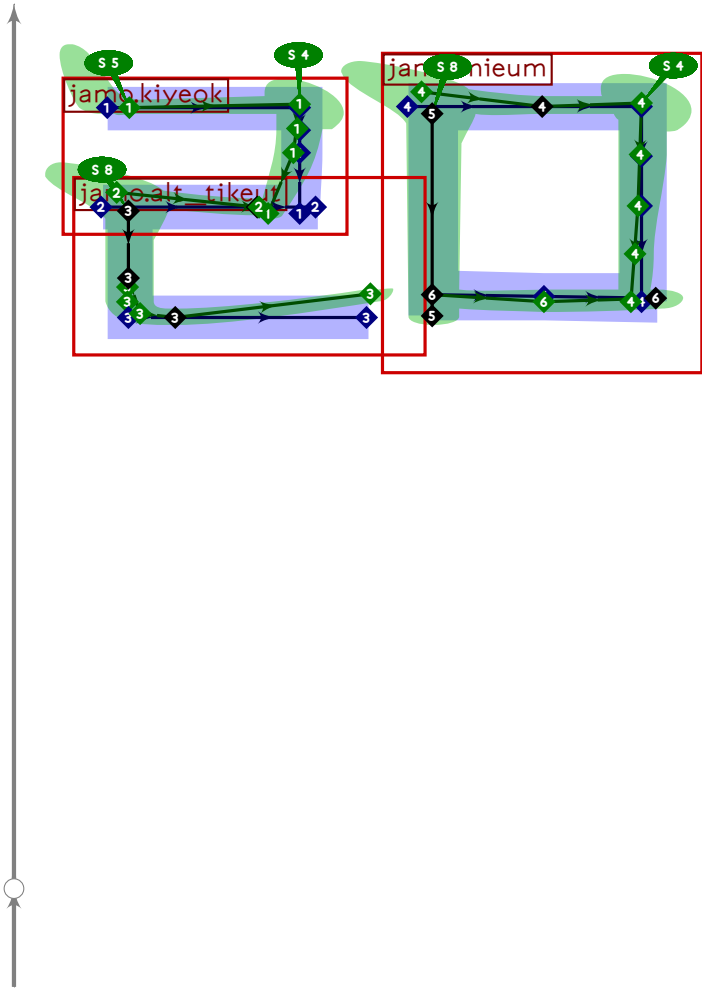



```

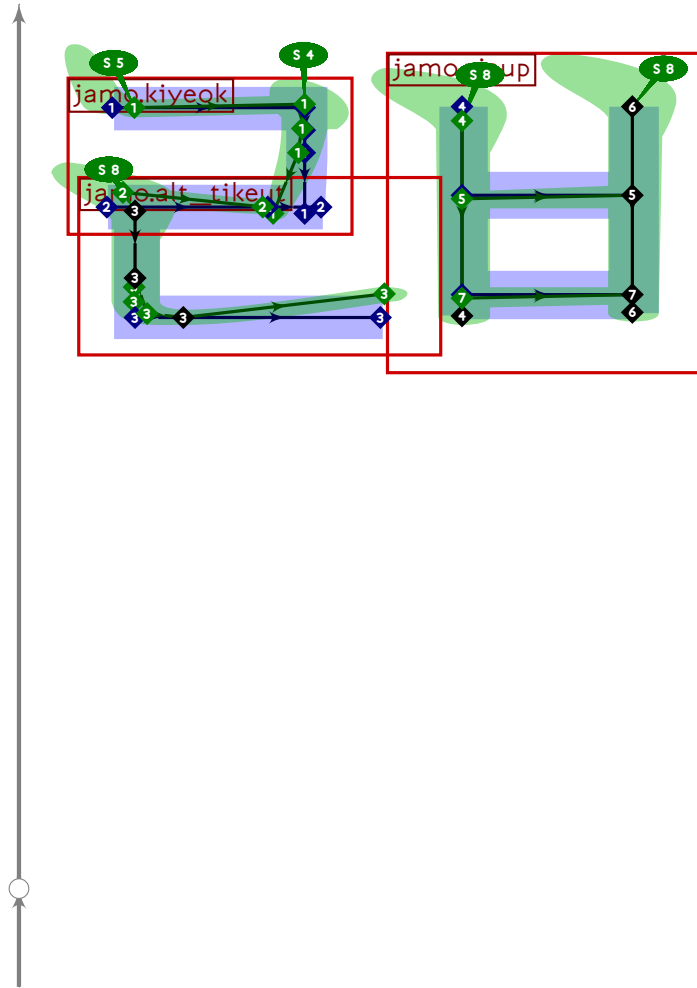
110 % hangul lead rieul-ssangtikeut
111 beginsuglyph("uniA967",103);
112   hangul.combine.lcr(205,203,103)(whatever,lixf,loxf);
113   tsu_render;
114 endsuglyph;
115

```

U+A968
mande.uniA968



```
116 % hangul lead rieul-mieum
117 begintsuglyph("uniA968",104);
118   hangul.combine.lr(205,106)(whatever,lixf,loxf);
119   tsu_render;
120 endsuglyph;
121
```

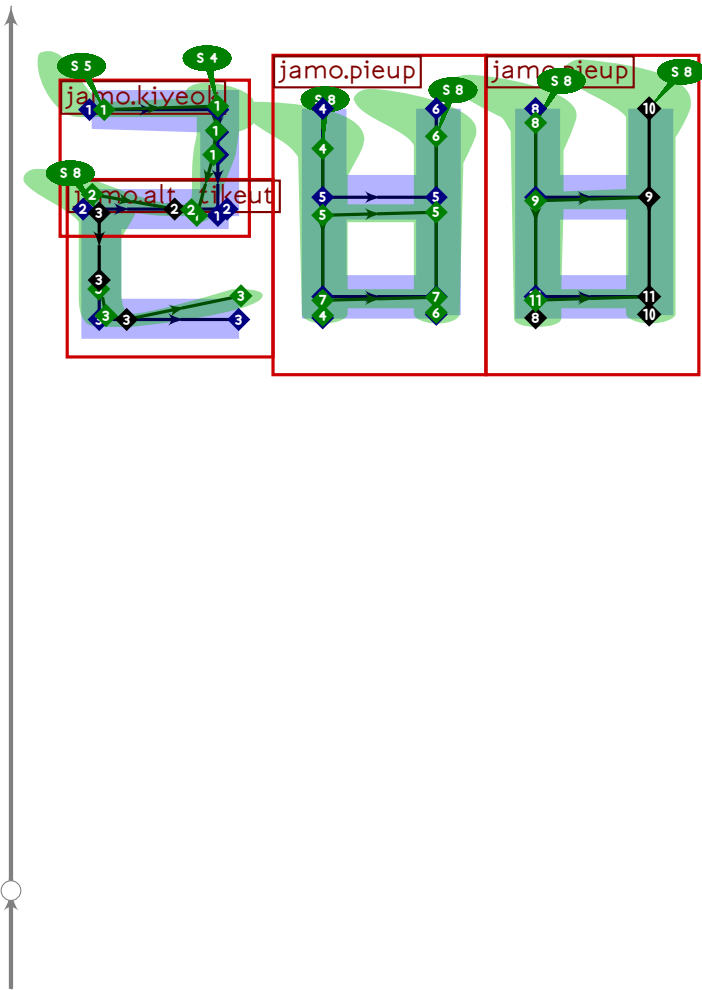


```

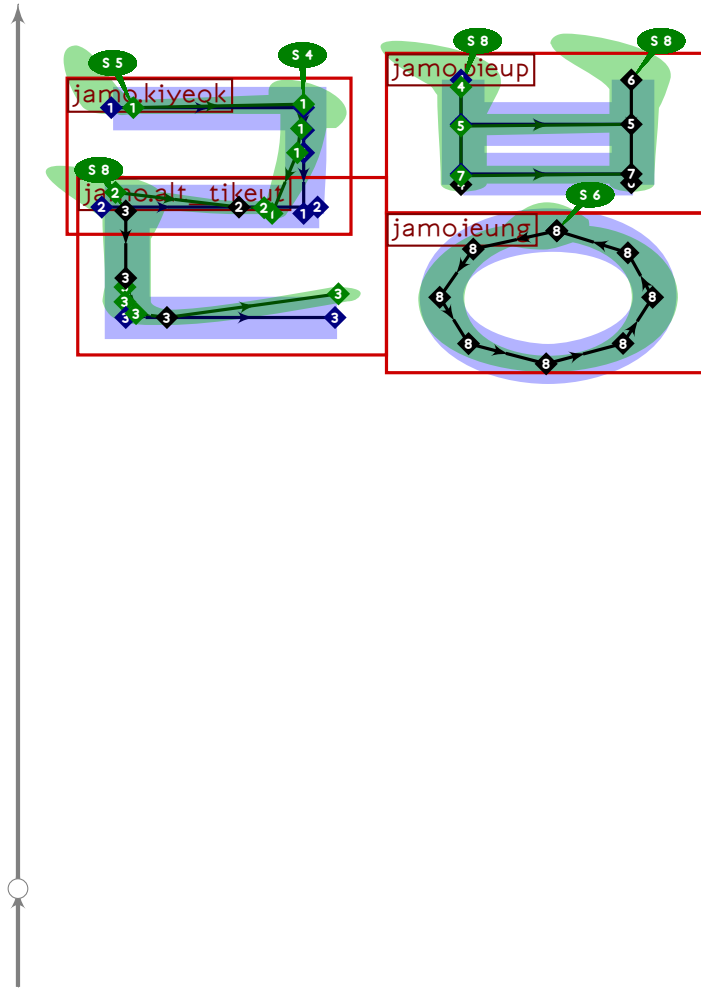
122 % hangul lead rieul-pieup
123 begintsuglyph("uniA969",105);
124   hangul.combine.lr(205,107)(whatever,lixf,loxf);
125   tsu_render;
126 endtsuglyph;
127

```

U+A96A
mande.uniA96A



```
128 % hangul lead rieul-ssangpieup
129 begintsuglyph("uniA96A",106);
130 hangul.combine.lcr(205,207,107)(whatever,lixf,loxf);
131 tsu_render;
132 endtsuglyph;
133
```

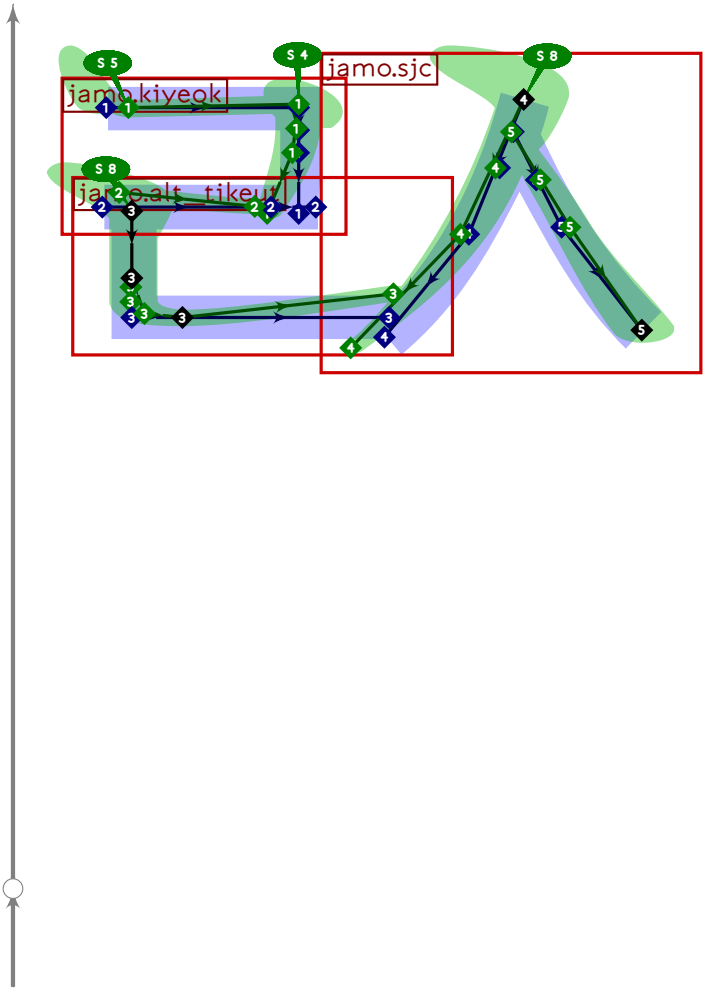


```

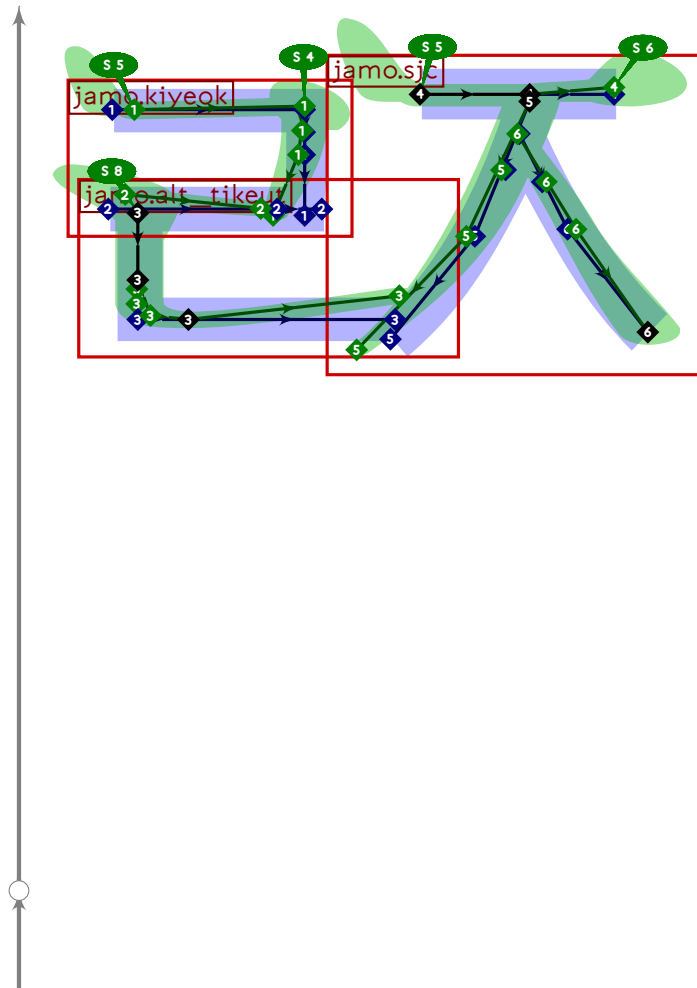
134 % hangul lead rieul-kapyeounpieup
135 beginsuglyph("uniA96B",107);
136 hangul.combine.lr(205,231)(whatever,lix,loxf);
137 tsu_render;
138 endsuglyph;
139

```

U+A96C
mande.uniA96C



```
140 % hangul lead rieul-sios
141 begintsuglyph("uniA96C",108);
142 hangul.combine.lr(205,109)(whatever,lixf,loxf);
143 tsu_render;
144 endtsuglyph;
145
```

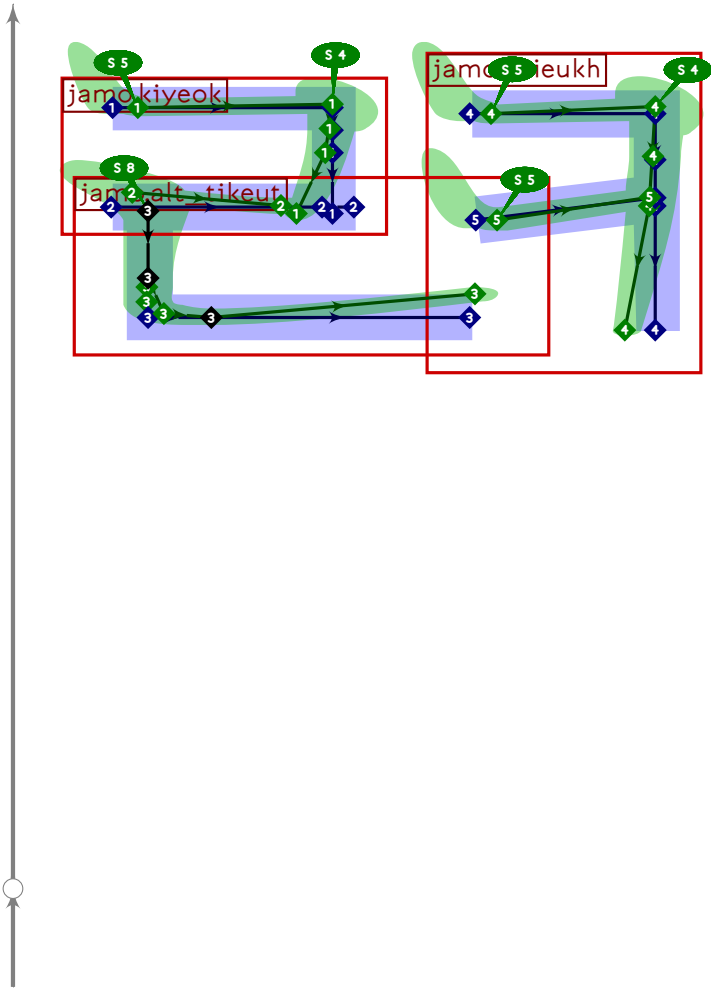


```

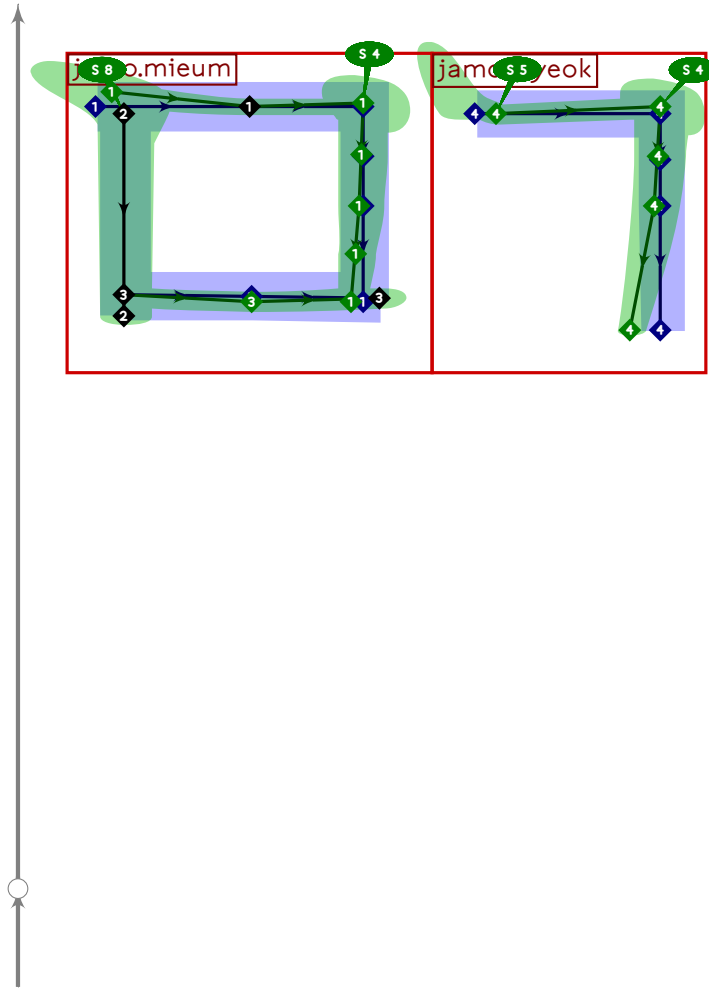
146 % hangul lead rieul-cieuc
147 begint Suglyph("uniA96D";109);
148   hangul.combine.lr(205,112)(whatever,lixf,loxf);
149   tsu_render;
150 endtsuglyph;
151

```

U+A96E
mande.uniA96E



```
152 % hangul lead rieul-khieukh
153 begintsuglyph("uniA96E",110);
154 hangul.combine.lr(205,115)(whatever,lixf,loxf);
155 tsu_render;
156 endtsuglyph;
157
```

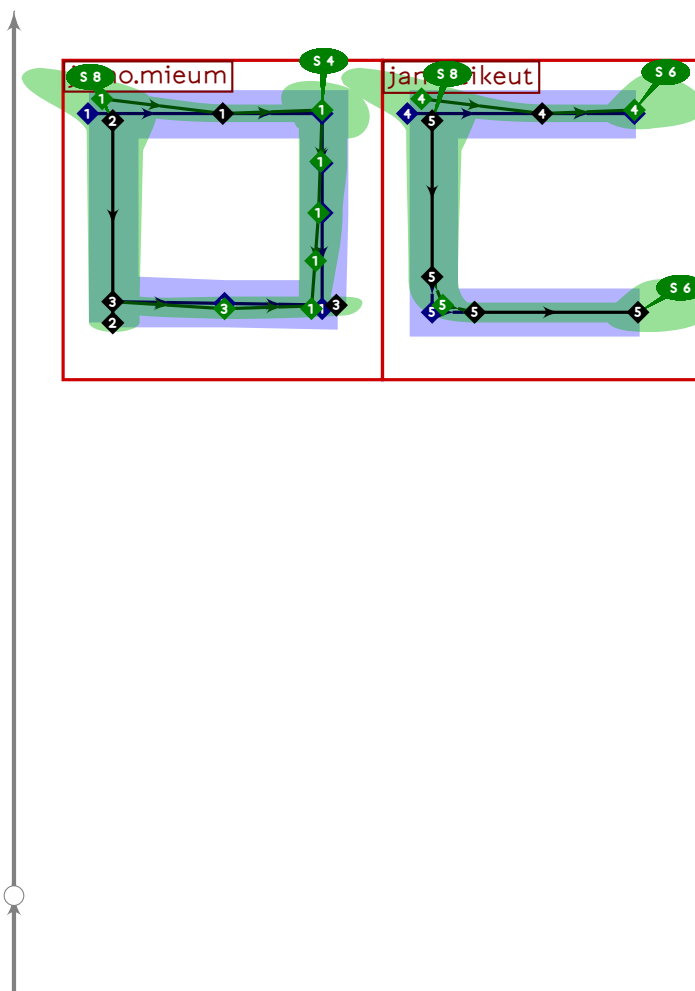



```

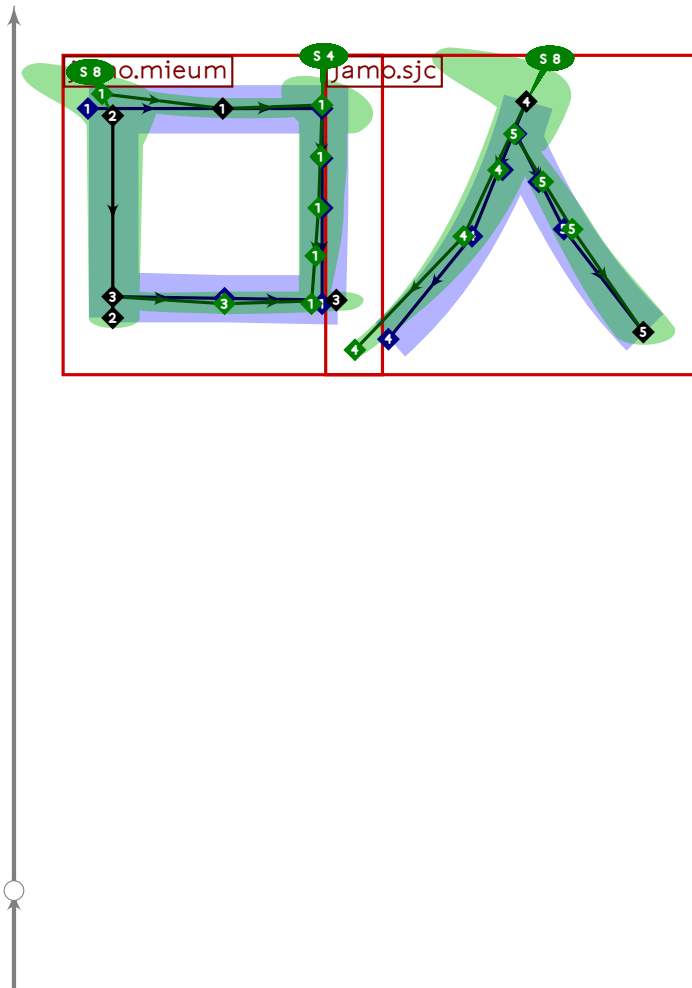
158 % hangul lead mieum-kiyeok
159 begintsuglyph("uniA96F",111);
160 hangul.combine.lr(106,100)(whatever,lixf,loxf);
161 tsu_render;
162 endtsuglyph;
163

```

U+A970
mande.uniA970



```
164 % hangul lead mieum-tikeut
165 begintsuglyph("uniA970",112);
166 hangul.combine.lr(106,103)(whatever,lixf,loxf);
167 tsu_render;
168 endtsuglyph;
169
```

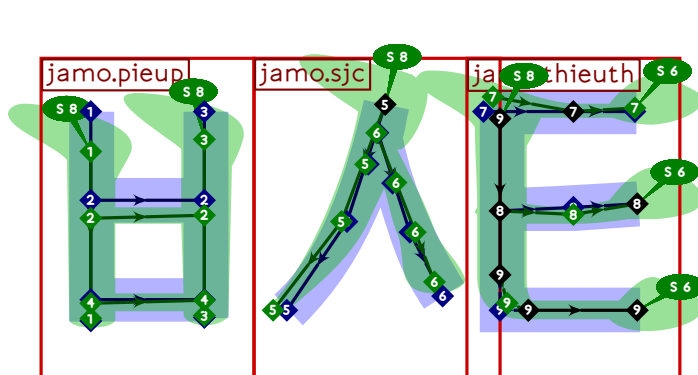


```

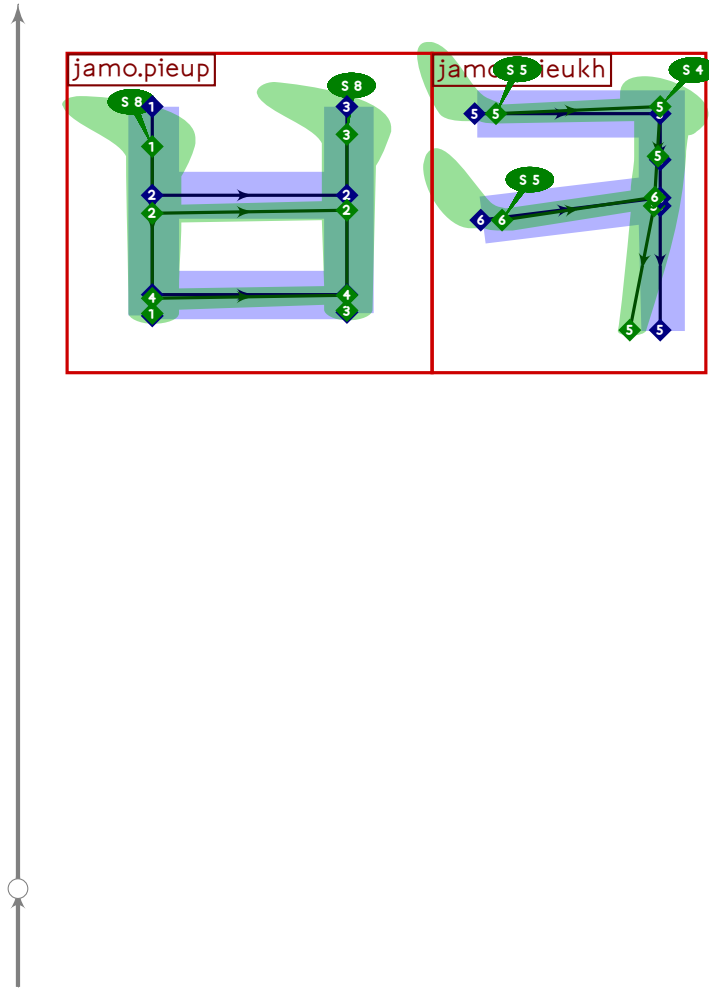
170 % hangul lead mieum-sios
171 begintsuglyph("uniA971",113);
172   hangul.combine.lr(106,109)(whatever,lixf,loxf);
173   tsu_render;
174 endtsuglyph;
175

```

U+A972
mande.uniA972



```
176 % hangul lead pieup-sios-thieuth
177 begintsuglyph("uniA972",114);
178   hangul.combine.lcr(207,209,116)(whatever,lixf,loxf);
179   tsu_render;
180 endtsuglyph;
181
```

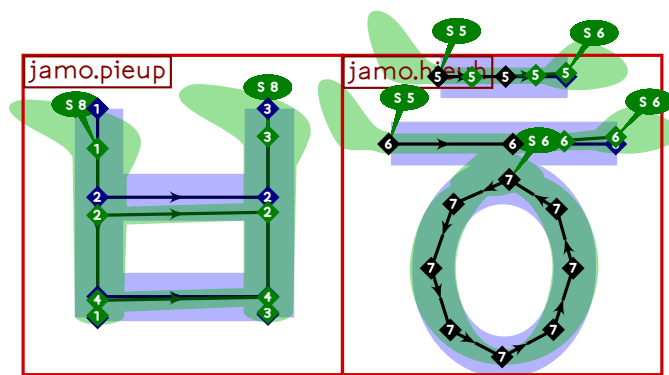


```

182 % hangul lead pieup-khieukh
183 begintsuglyph("uniA973",115);
184   hangul.combine.lr(207,115)(whatever,lixf,loxf);
185   tsu_render;
186 endtsuglyph;
187

```

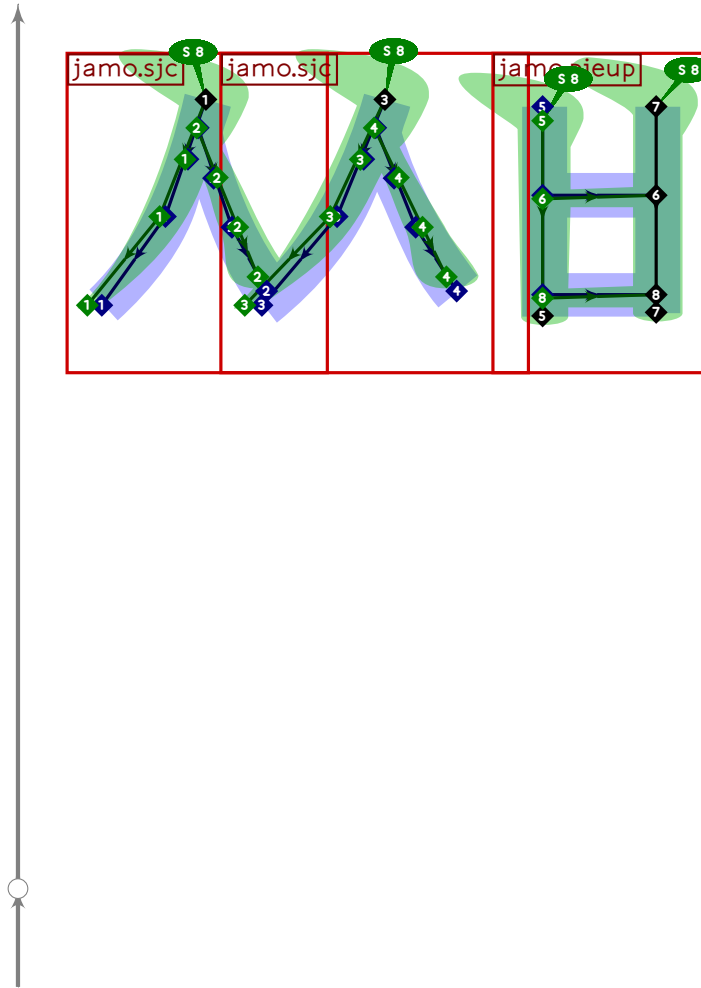
U+A974
mande.uniA974



```

188 % hangul lead pieup-hieuh
189 begintsuglyph("uniA974",116);
190   hangul.combine.lr(207,118)(whatever,lixf,loxf);
191   tsu_render;
192 endtsuglyph;
193

```

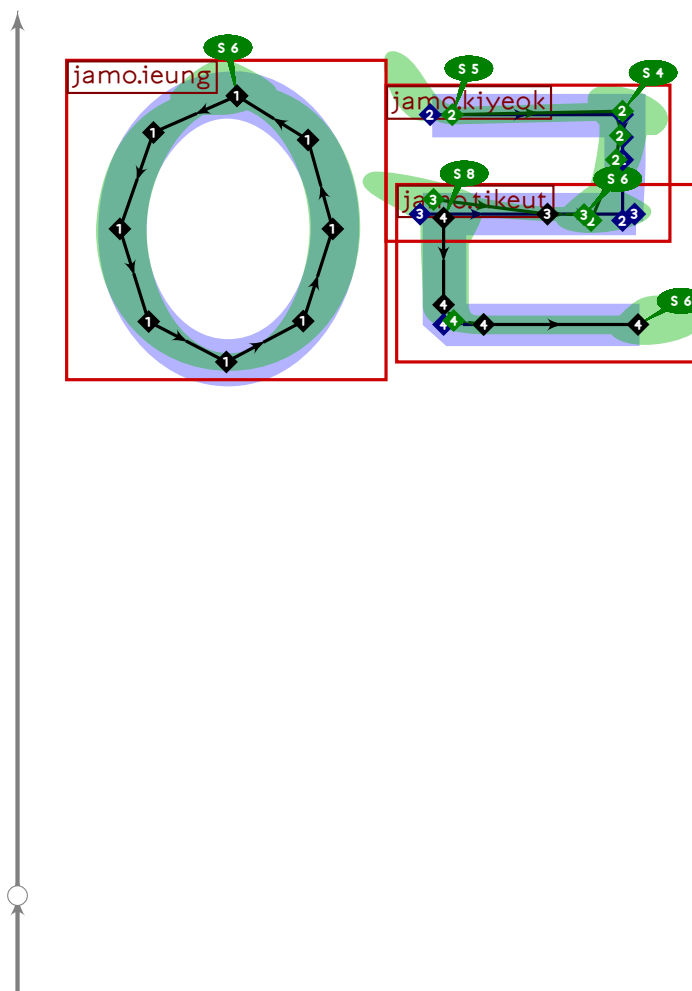


```

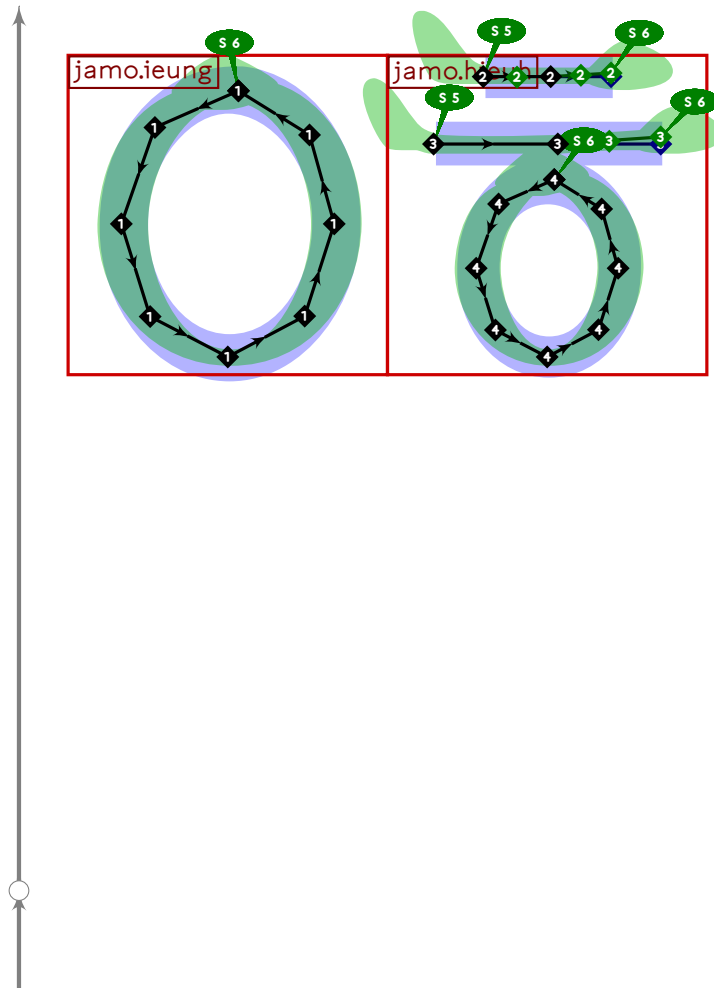
194 % hangul lead ssangsios-pieup
195 begint Suglyph("uniA975",117);
196   hangul.combine.lcr(209,209,107)(whatever,lixf,loxf);
197   tsu_render;
198 endtsuglyph;
199

```

U+A976
mande.uniA976



```
200 % hangul lead ieung-rieul
201 begintsuglyph("uniA976";118);
202   hangul.combine.lr(111,105)(whatever,lixf,loxf);
203   tsu_render;
204 endtsuglyph;
205
```

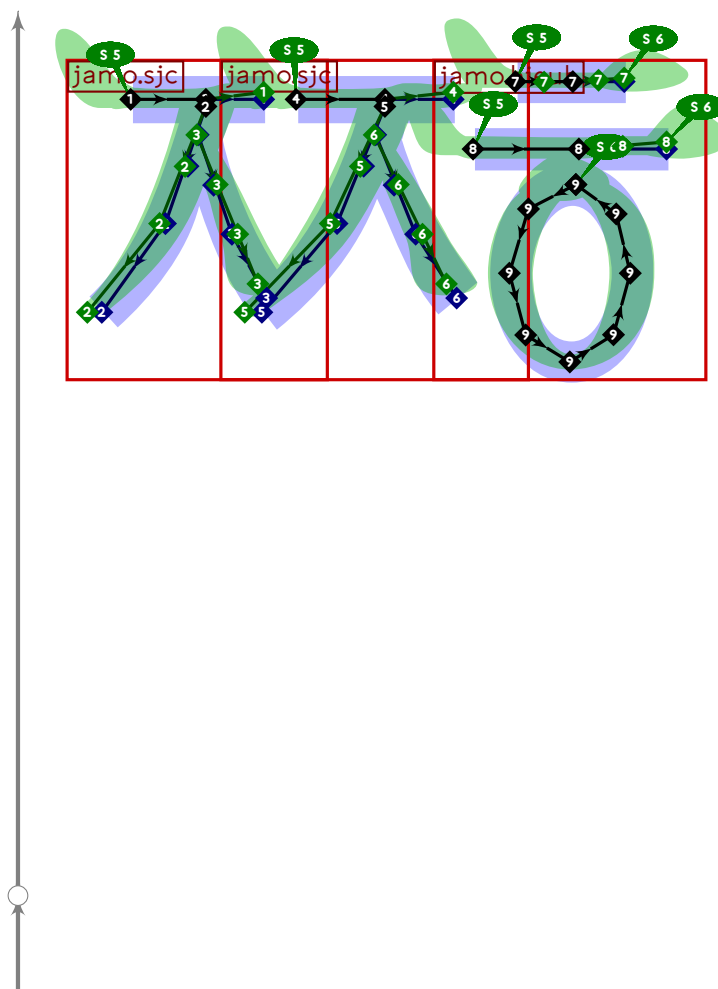



```

206 % hangul lead ieung-hieuh
207 begintsuglyph("uniA977",119);
208   hangul.combine.lr(111,118)(whatever,lixf,loxf);
209   tsu_render;
210 endtsuglyph;
211

```

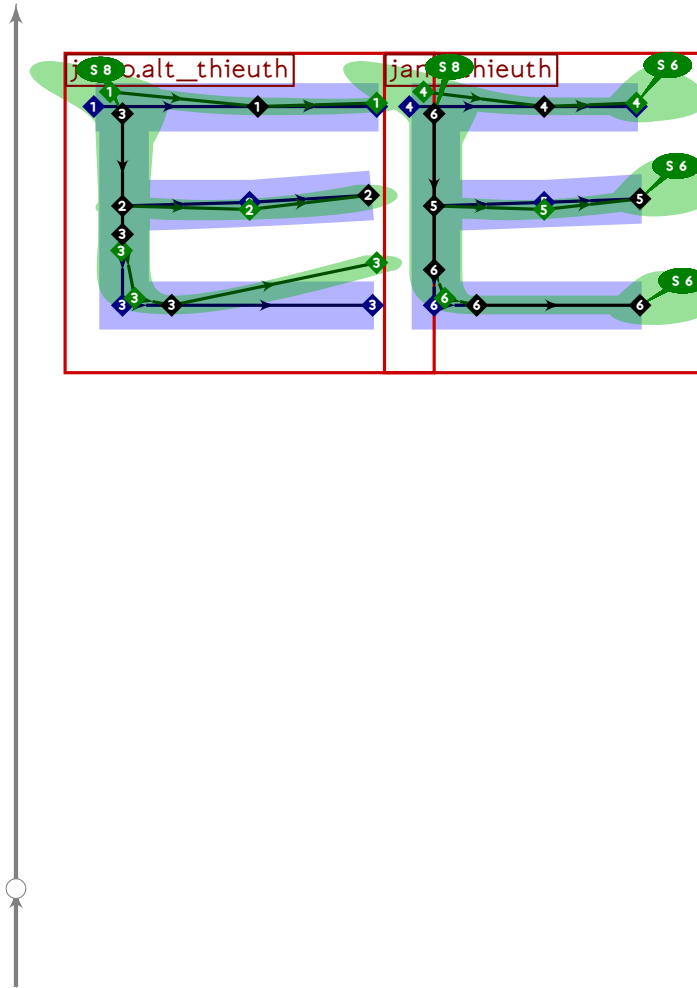
U+A978
mande.uniA978



```

212 % hangul lead ssangcieuc-hieuh
213 begint Suglyph("uniA978",120);
214   hangul.combine.lcr(212,212,118)(whatever,lixf,loxf);
215   tsu_render;
216 endtsuglyph;
217

```

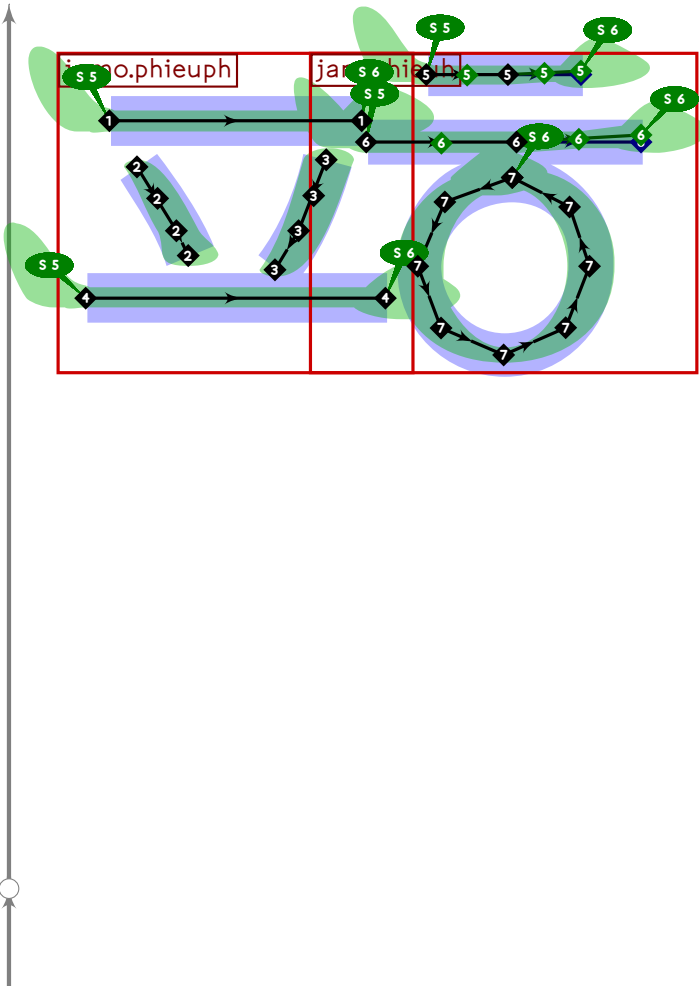


```

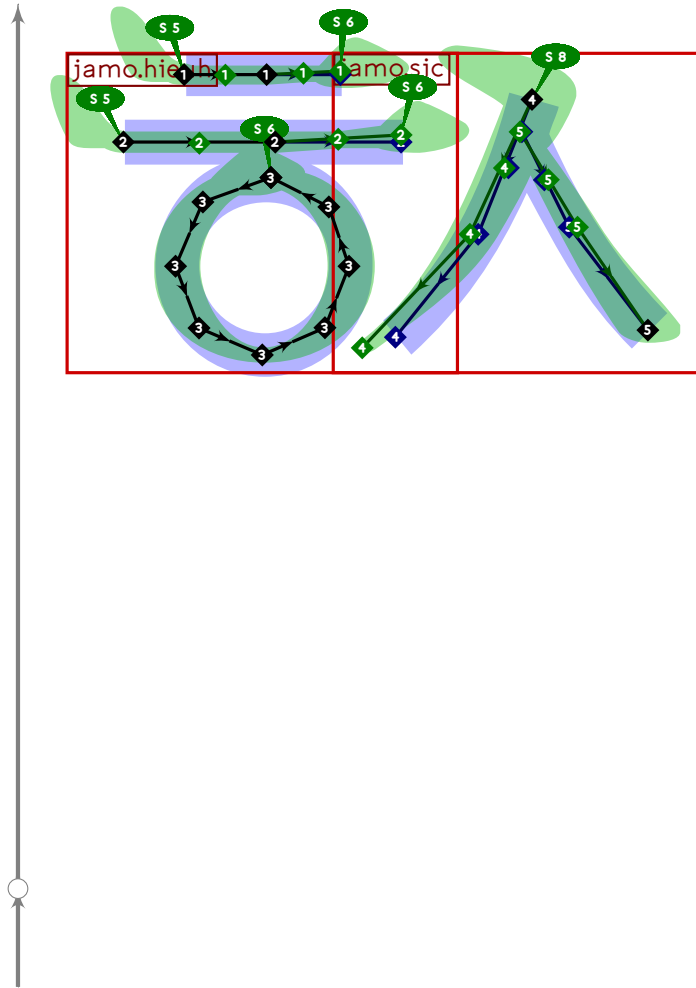
218 % hangul lead ssangthieuth
219 begintsuglyph("uniA979",121);
220 hangul.combine.lr(216,116)(whatever,lixf,loxf);
221 tsu_render;
222 endsuglyph;
223

```

U+A97A
mande.uniA97A



```
224 % hangul lead phieuph-hieuh
225 begintsuglyph("uniA97A",122);
226   hangul.combine.lr(117,118)(whatever,lixf,loxf);
227   tsu_render;
228 endtsuglyph;
229
```

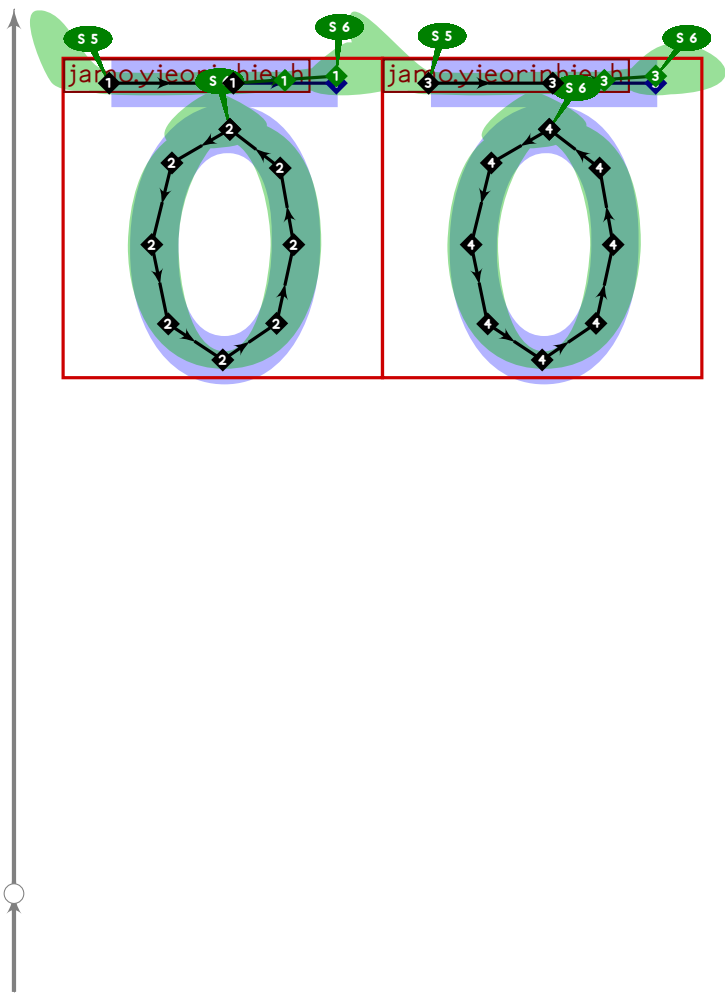


```

230 % hangul lead hieuh-sios
231 begint Suglyph("uniA97B",123);
232   hangul.combine.lr(118,109)(whatever,lixf,loxf);
233   tsu_render;
234 endtsuglyph;
235

```

U+A97C
mande.uniA97C

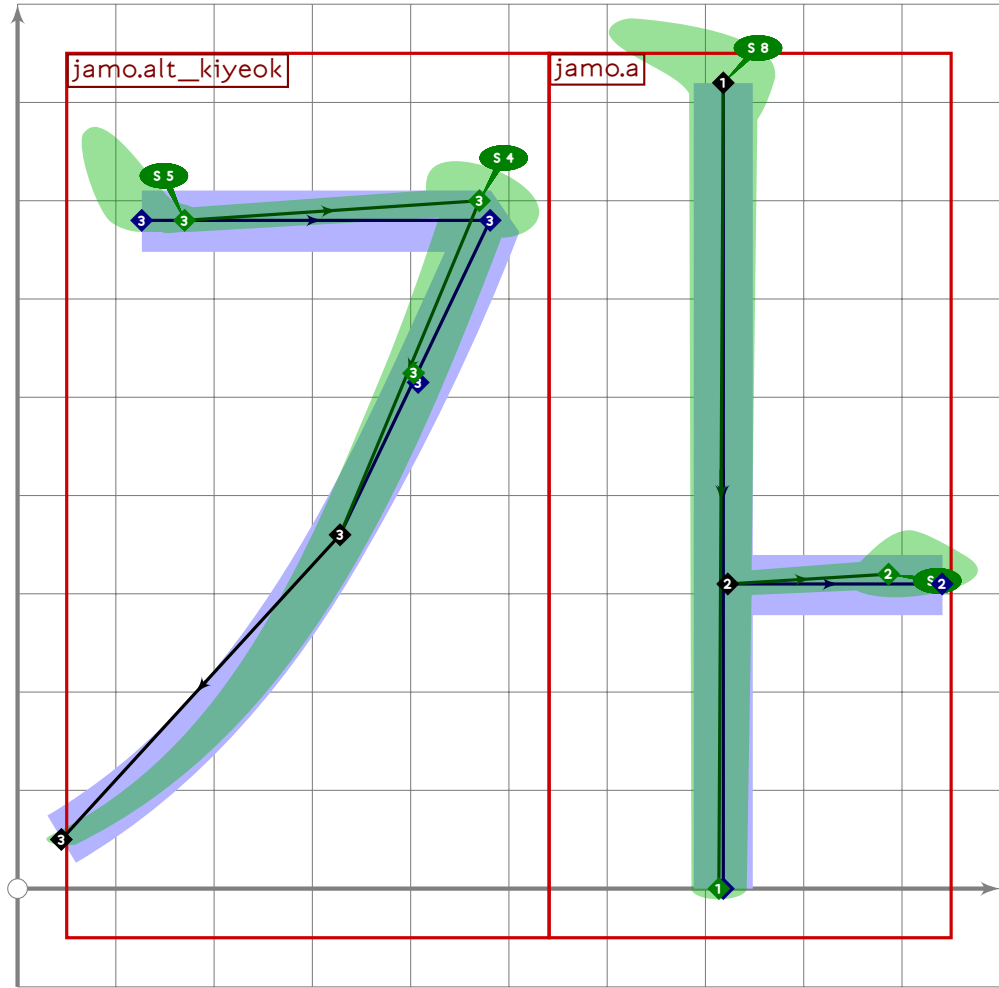


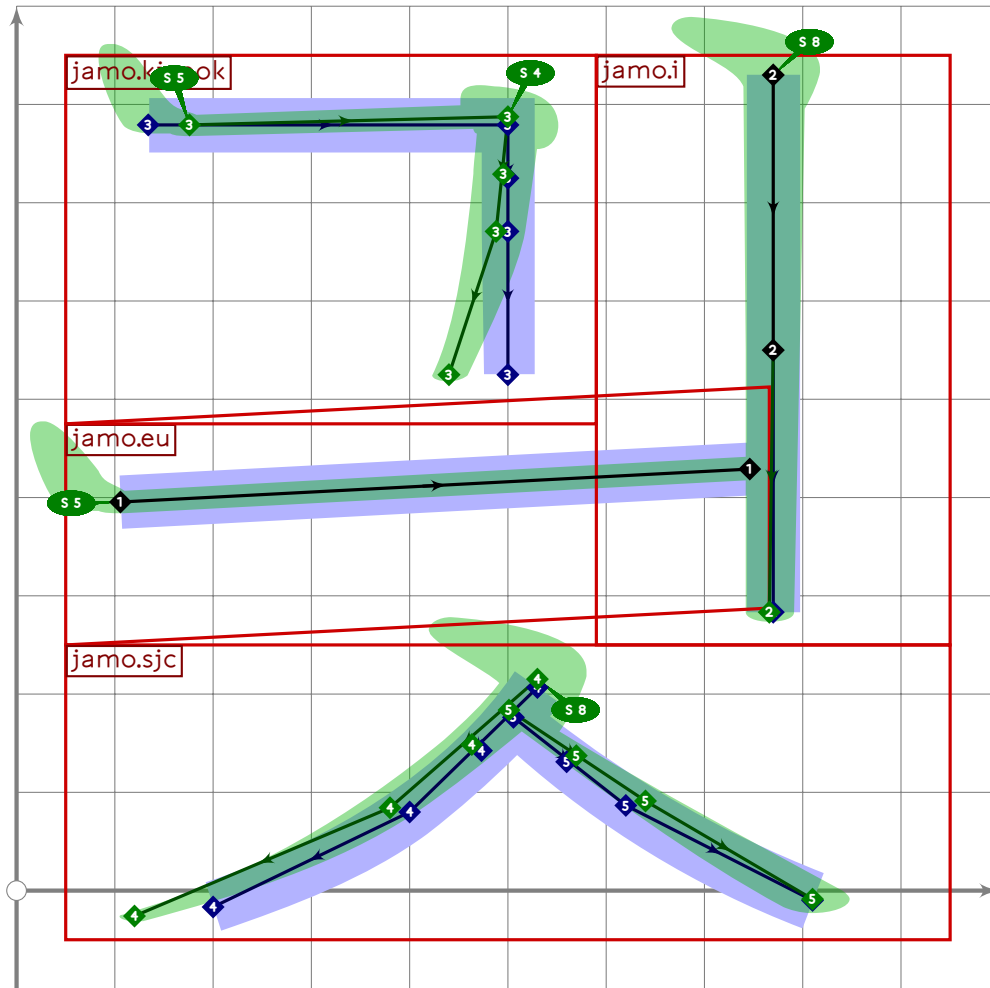
```
236 % hangul lead ssangyeorinhieuh
237 begintsuglyph("uniA97C",124);
238   hangul.combine.lcr(221,230,221)(whatever,lixf,loxf);
239   tsu_render;
240 endsuglyph;
241
242 _____
243
244 endfont;
245
246 _____
```

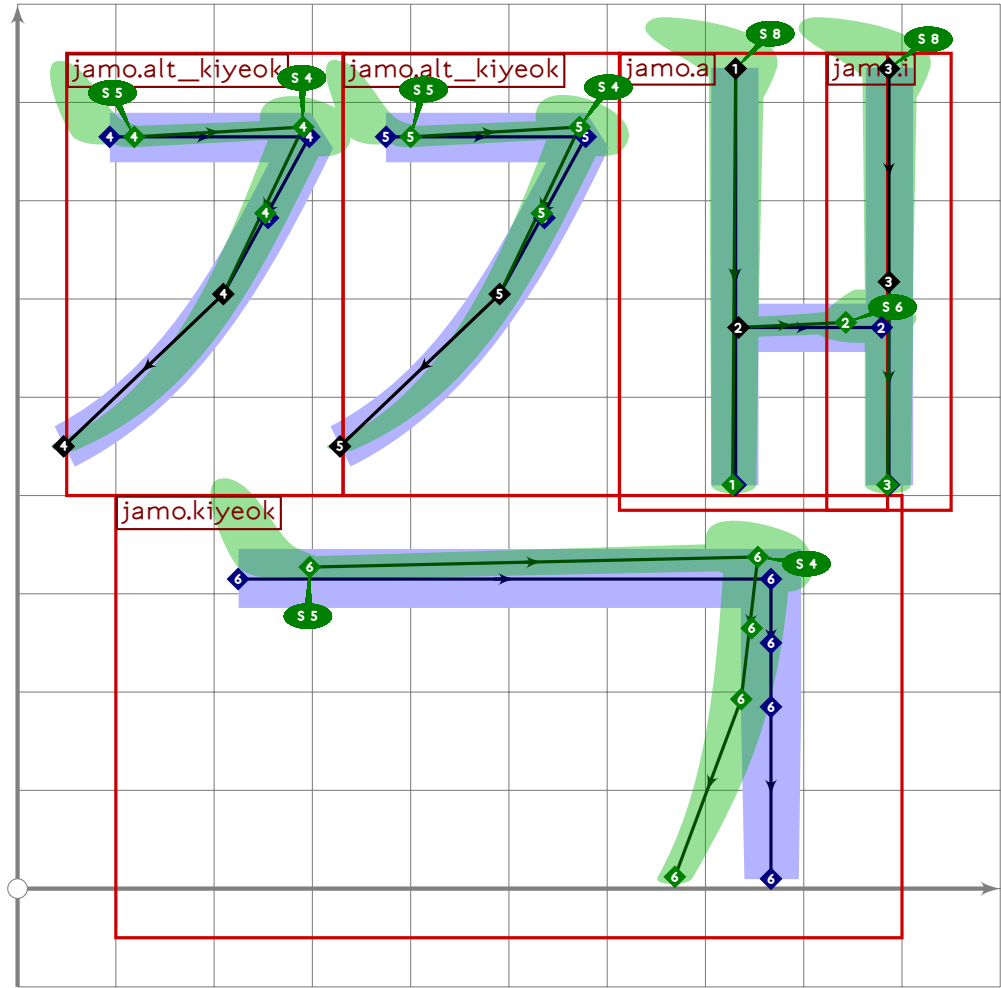
mande-ac.mp

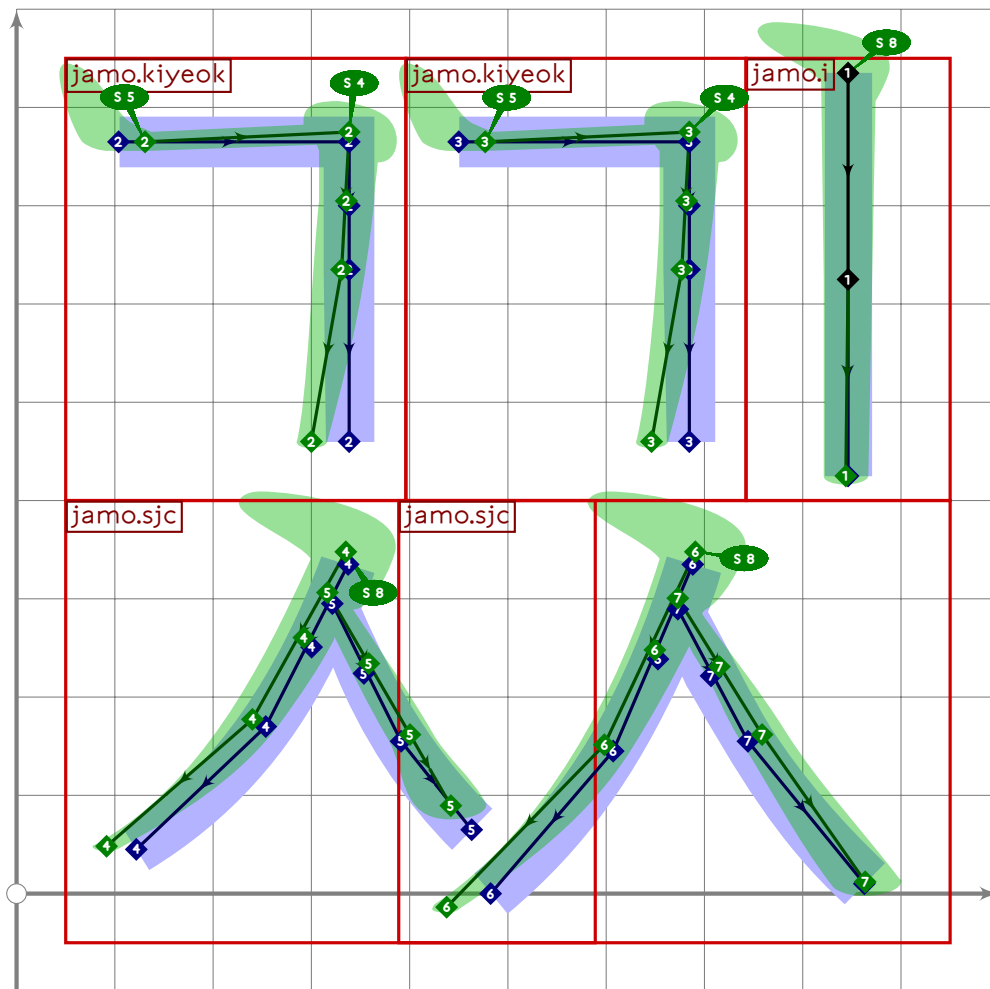
```
1 % GENERATED FILE - edit the source in make-hglpages instead!
2
3 string hgls__page; hgls__page="AC";
4 hgls__lead=0;
5 hgls__vowel=0;
6 hgls__tail=0;
7
8 input hglpage.mp;
9 endfont;
```

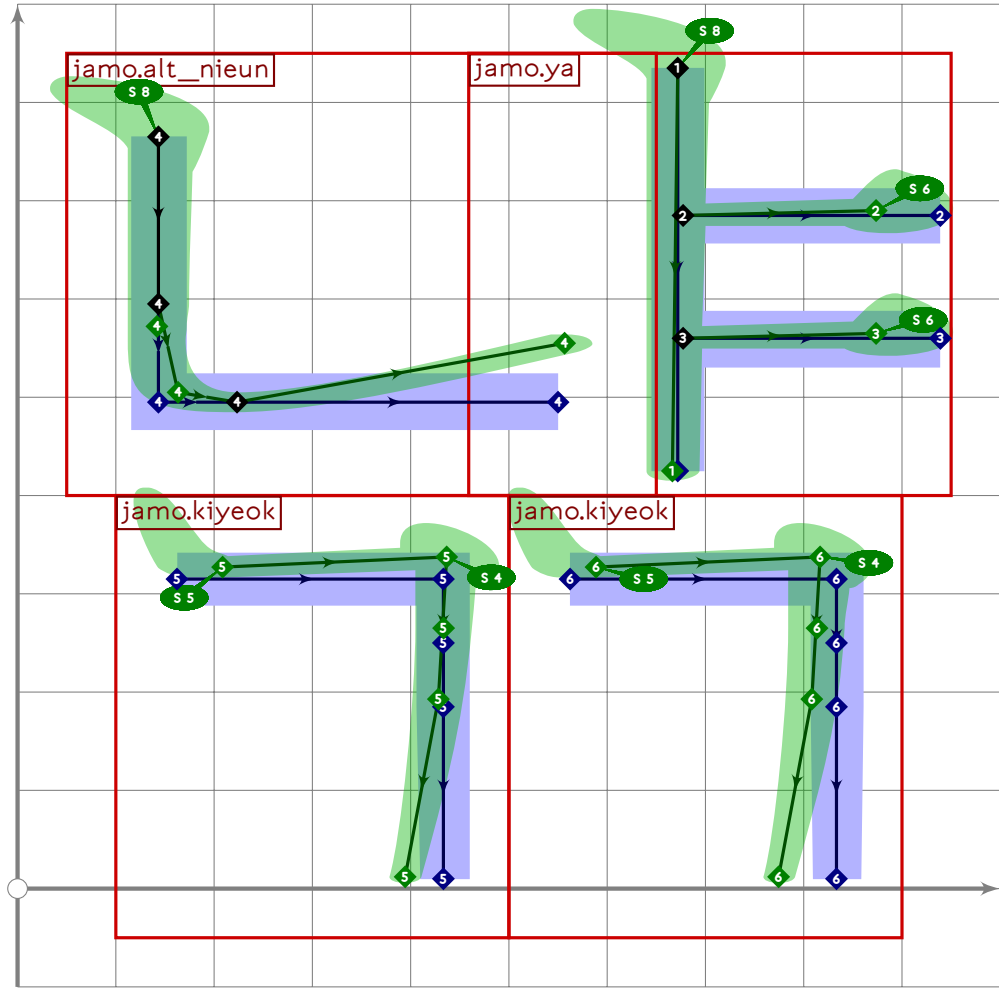
PLEASE NOTE: The files mande-ac.mp through mande-d6.mp are algorithmically generated, and identical except for the four variable assignments defining the start of each file's coverage range. The file mande-d7.mp is similar, but also includes hglxtb.mp. They define a total of 11172 glyphs for precomposed hangul syllables, which all consist of the same few jamo in systematically varying arrangements. It seems that generating a proof page for every one of these files and glyphs would not be a good use of resources. Instead, we give an example of one MetaPost file above, and on the following pages, detailed proofs for 28 syllable glyphs covering at least one example of every lead, vowel, and tail jamo. After that is a table of all the precomposed syllables printed 480 per page.

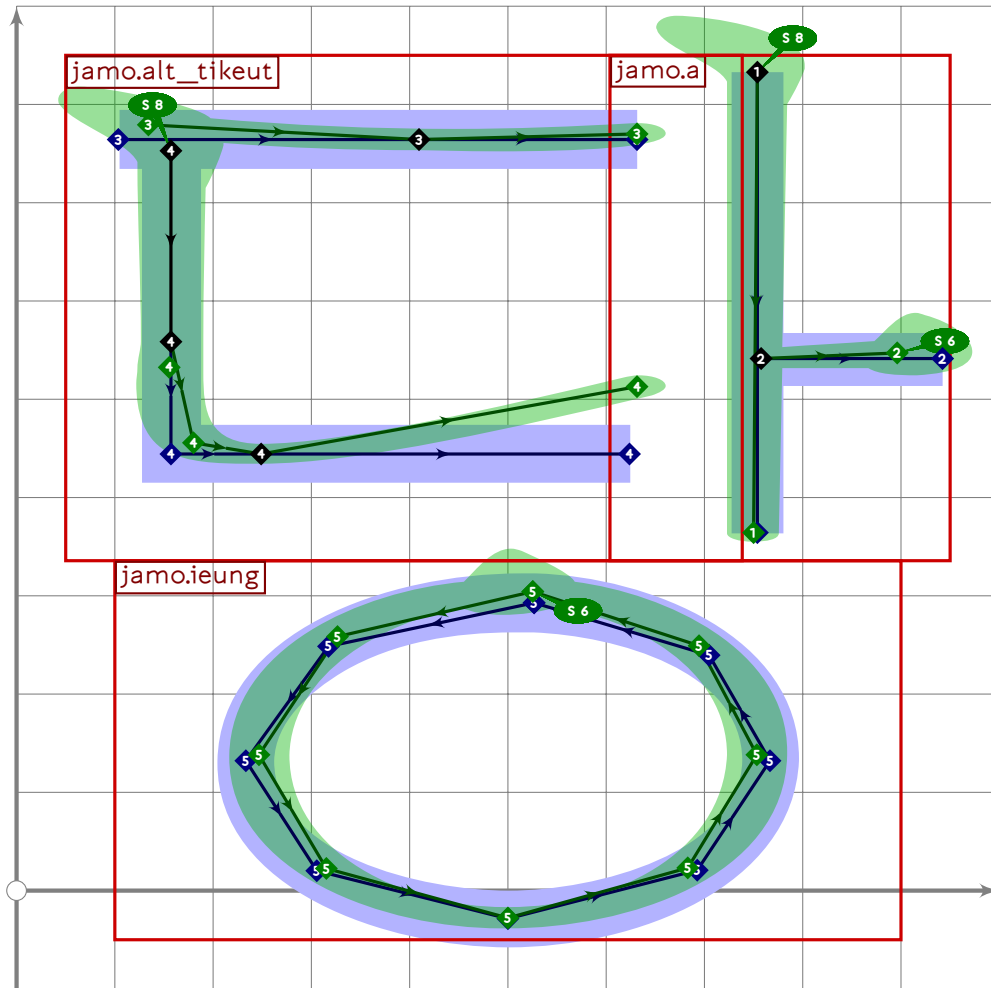




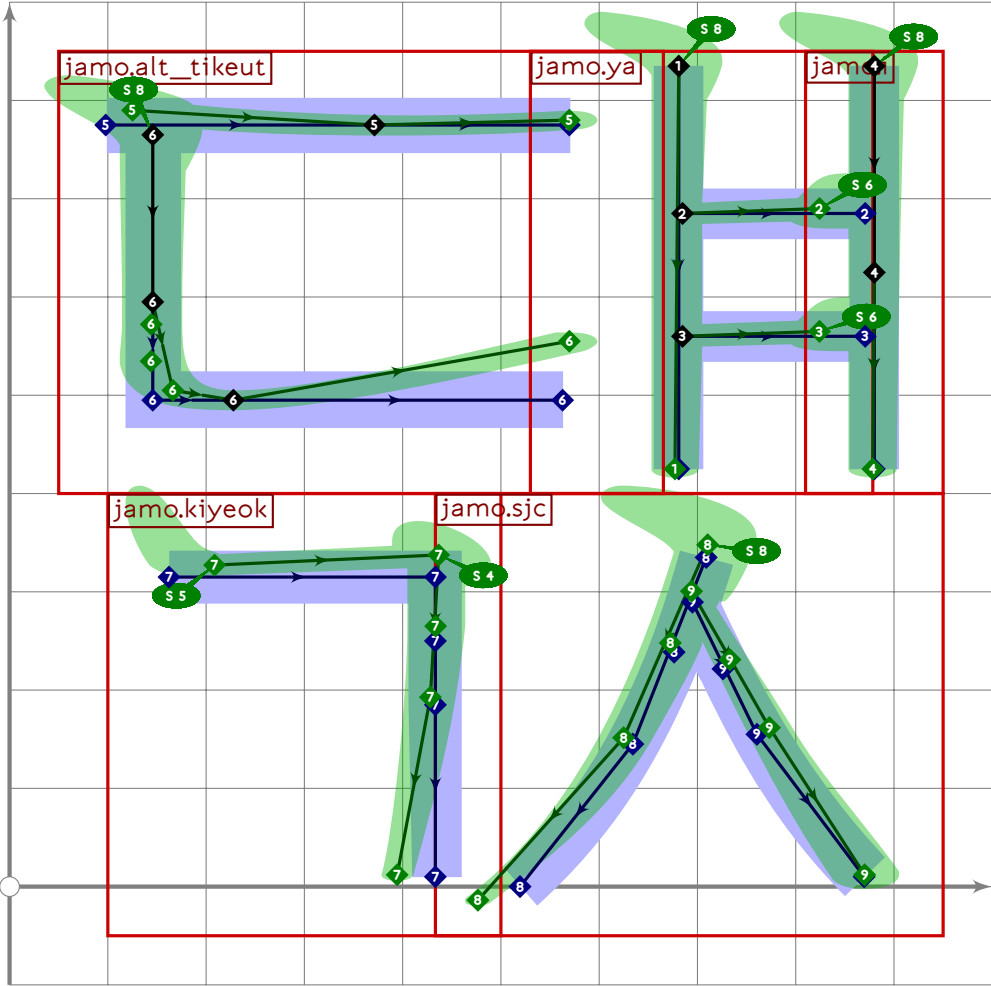




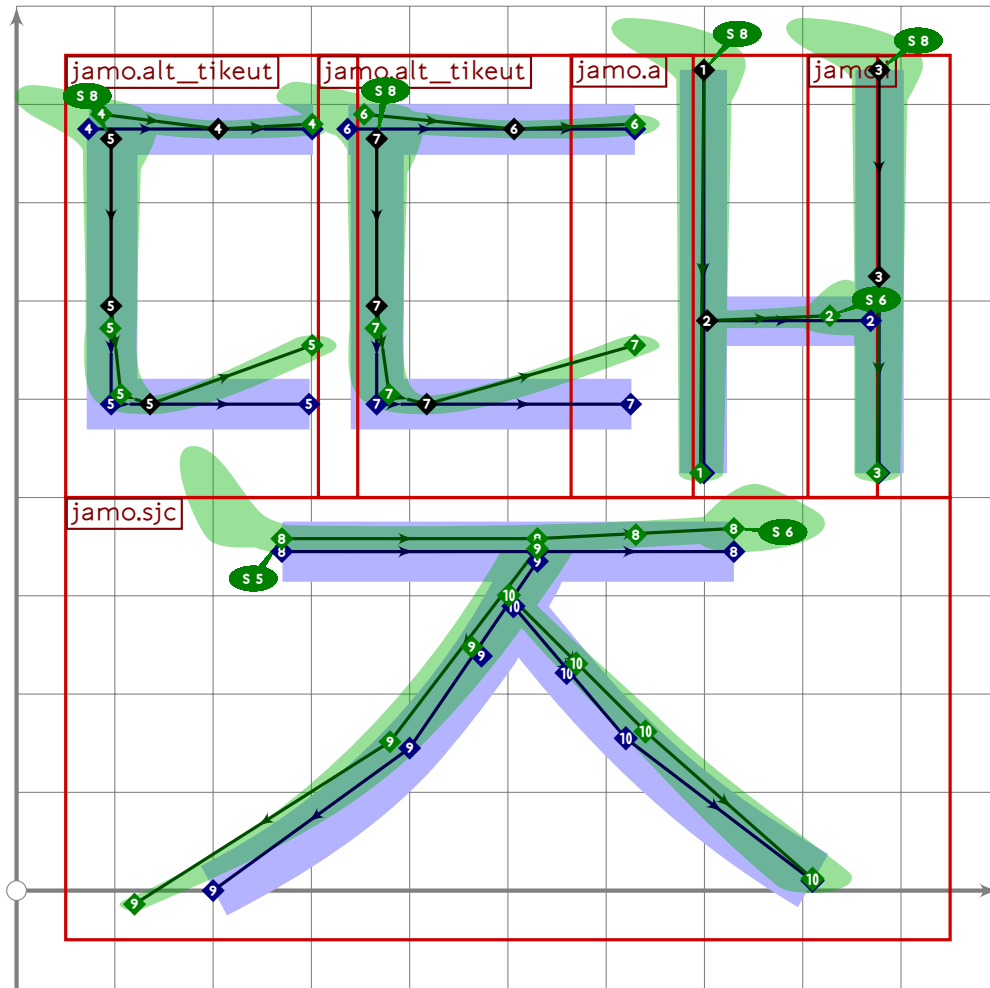


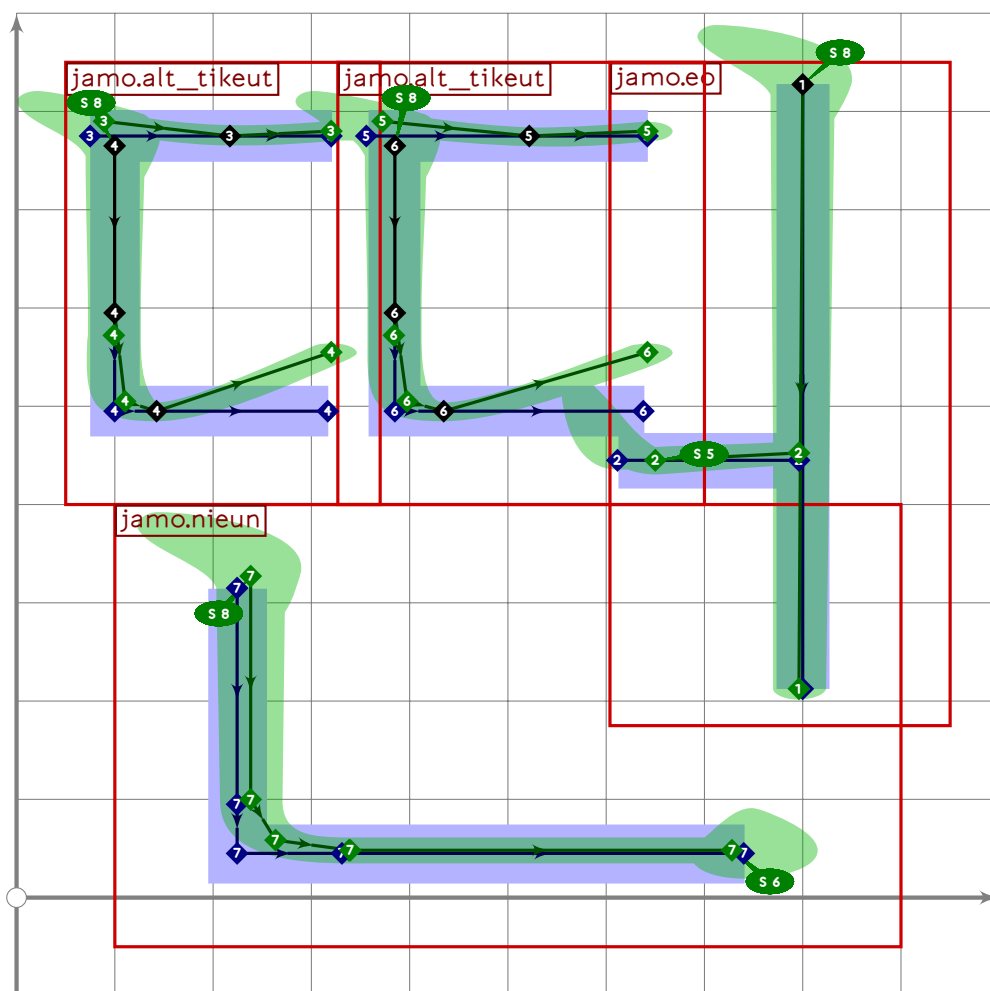


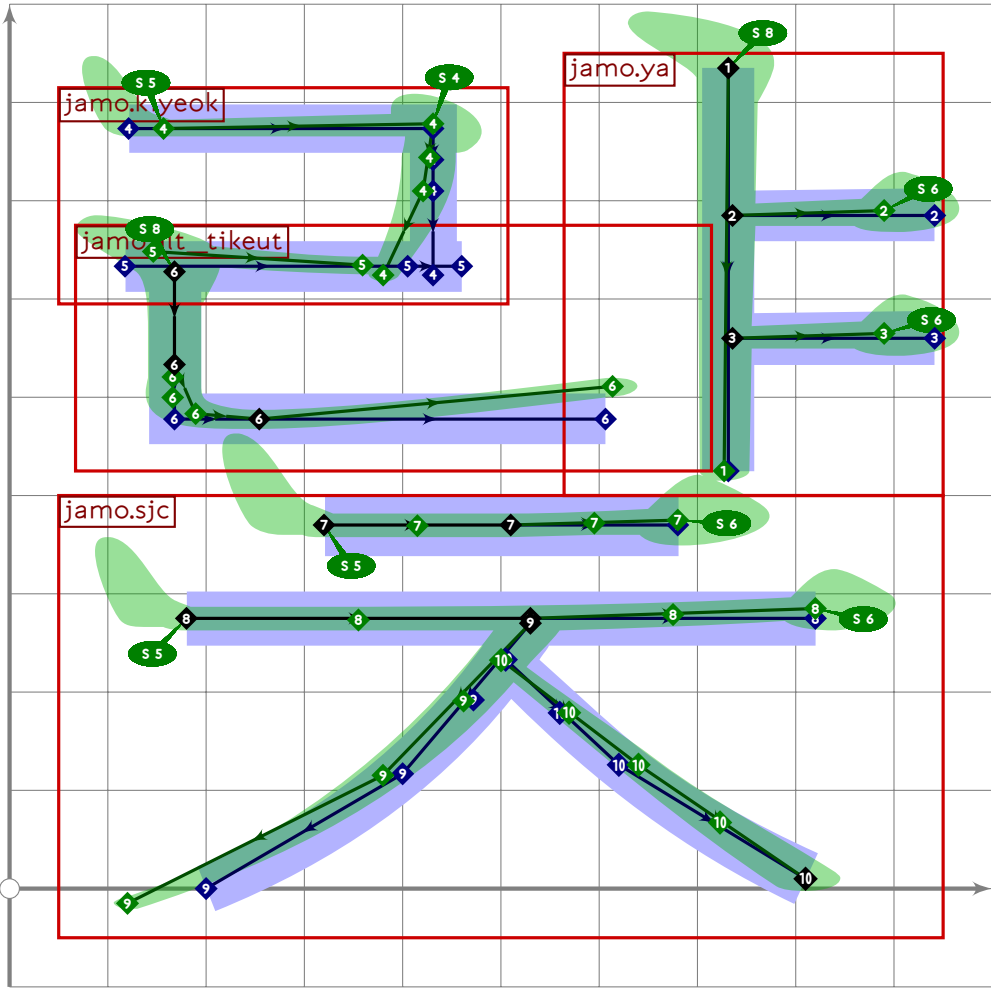
U+B33B
mande.uniB33B

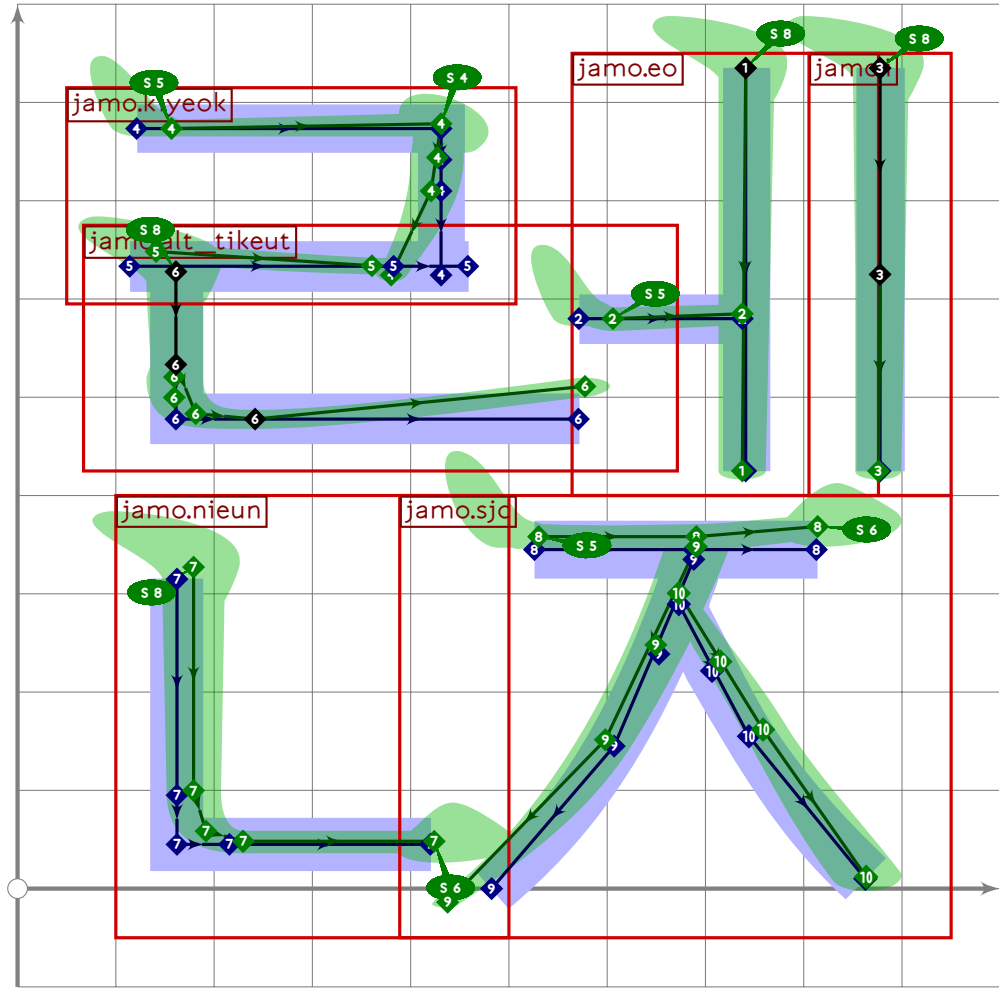


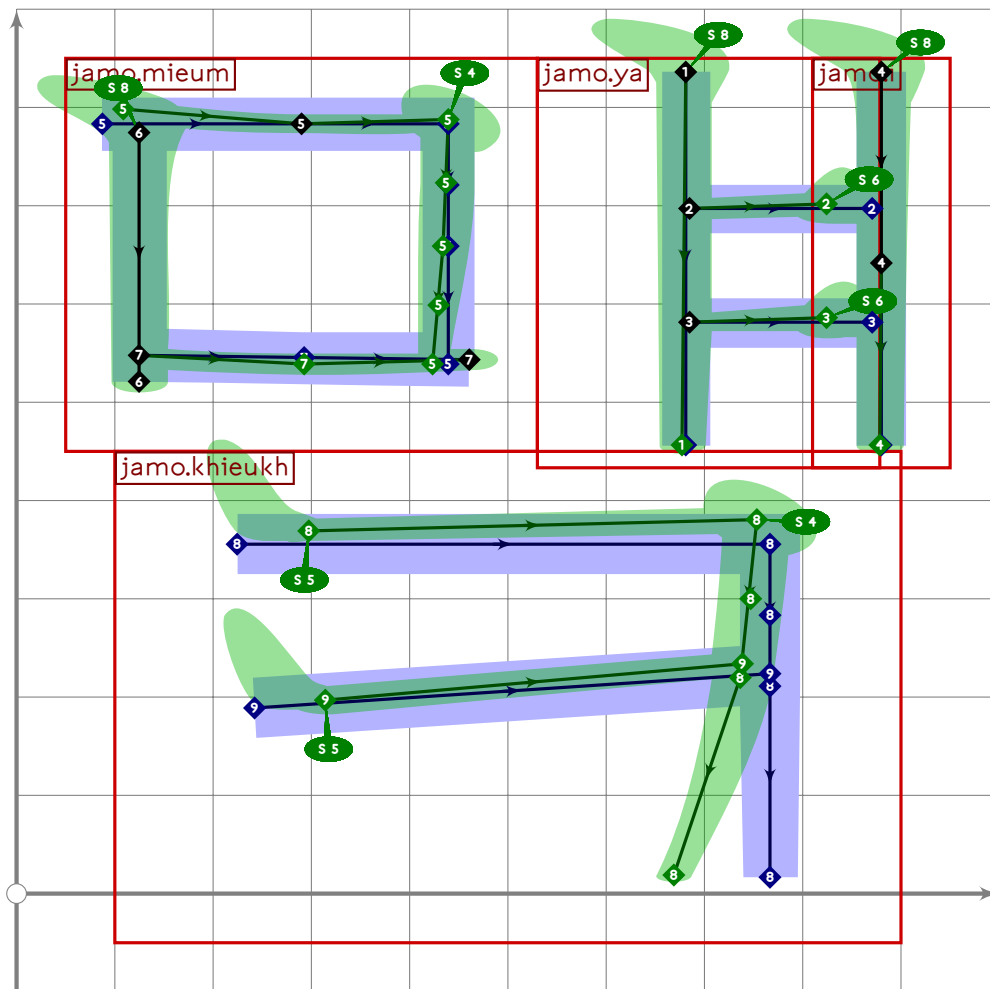
AC

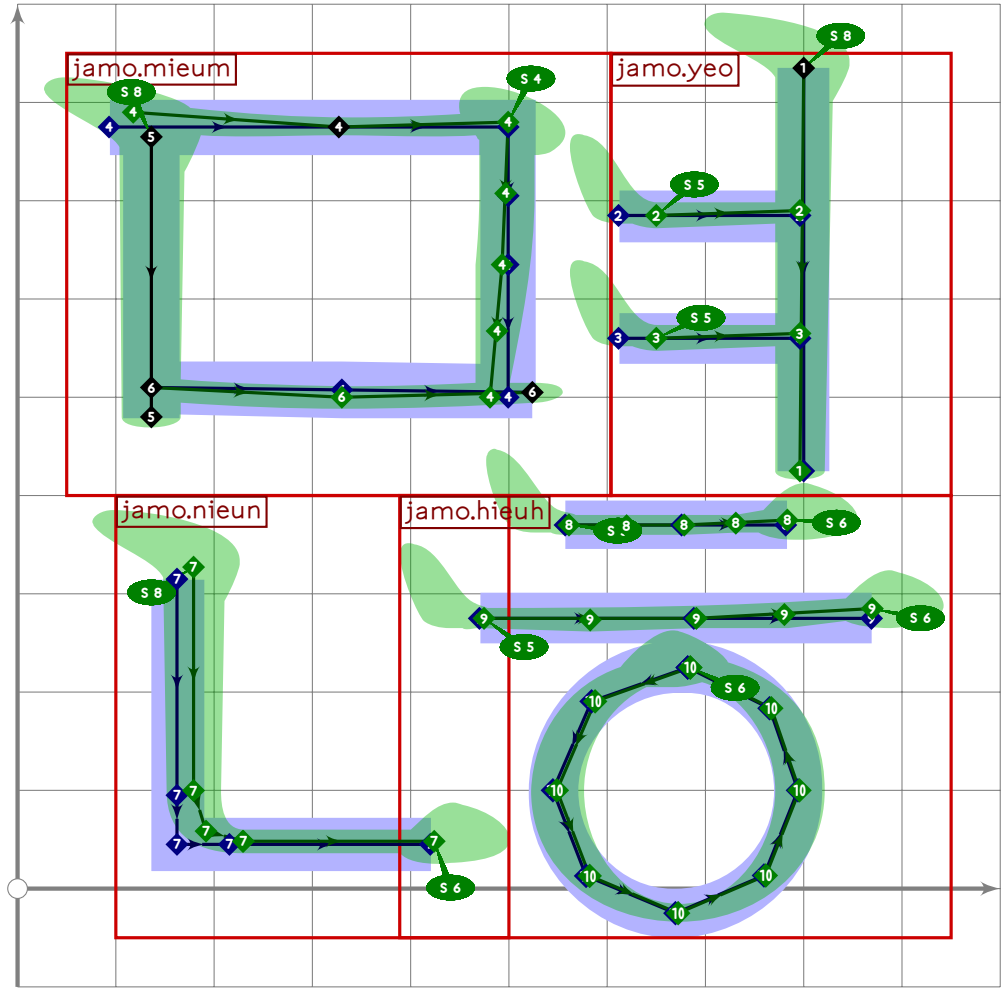


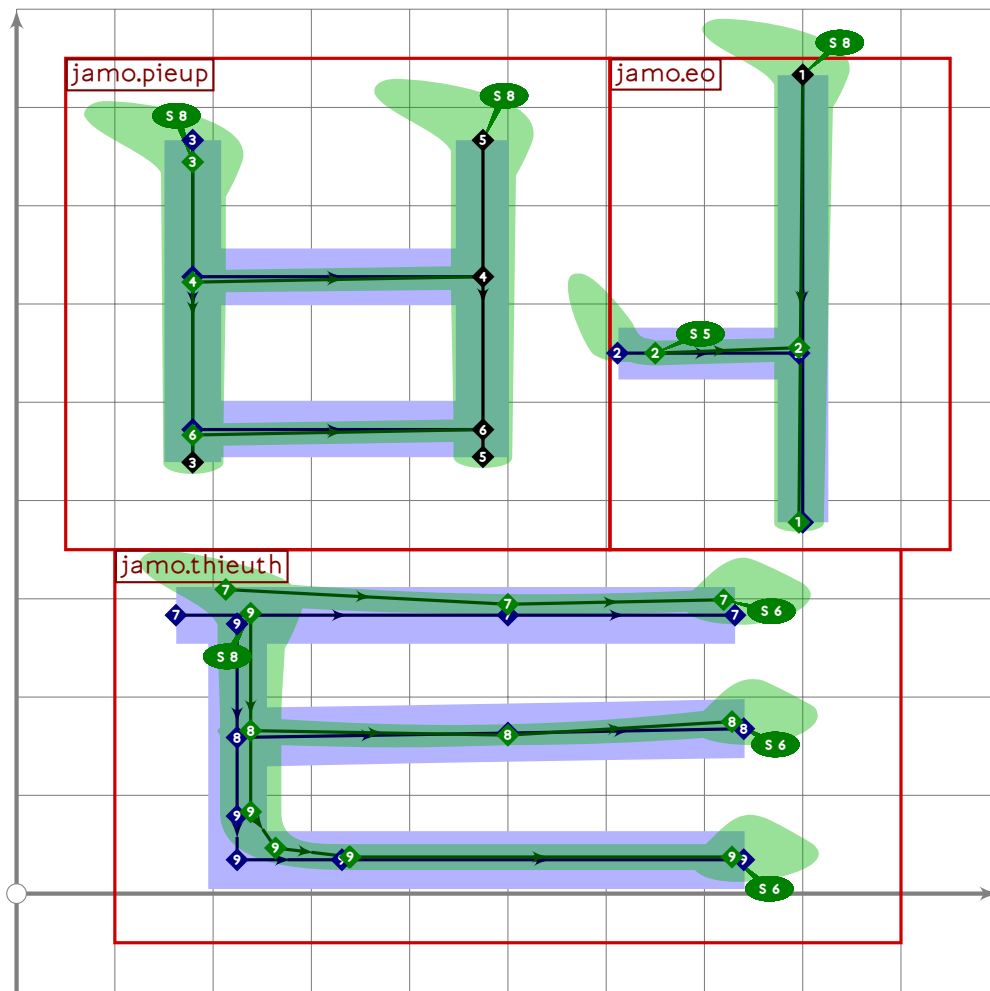


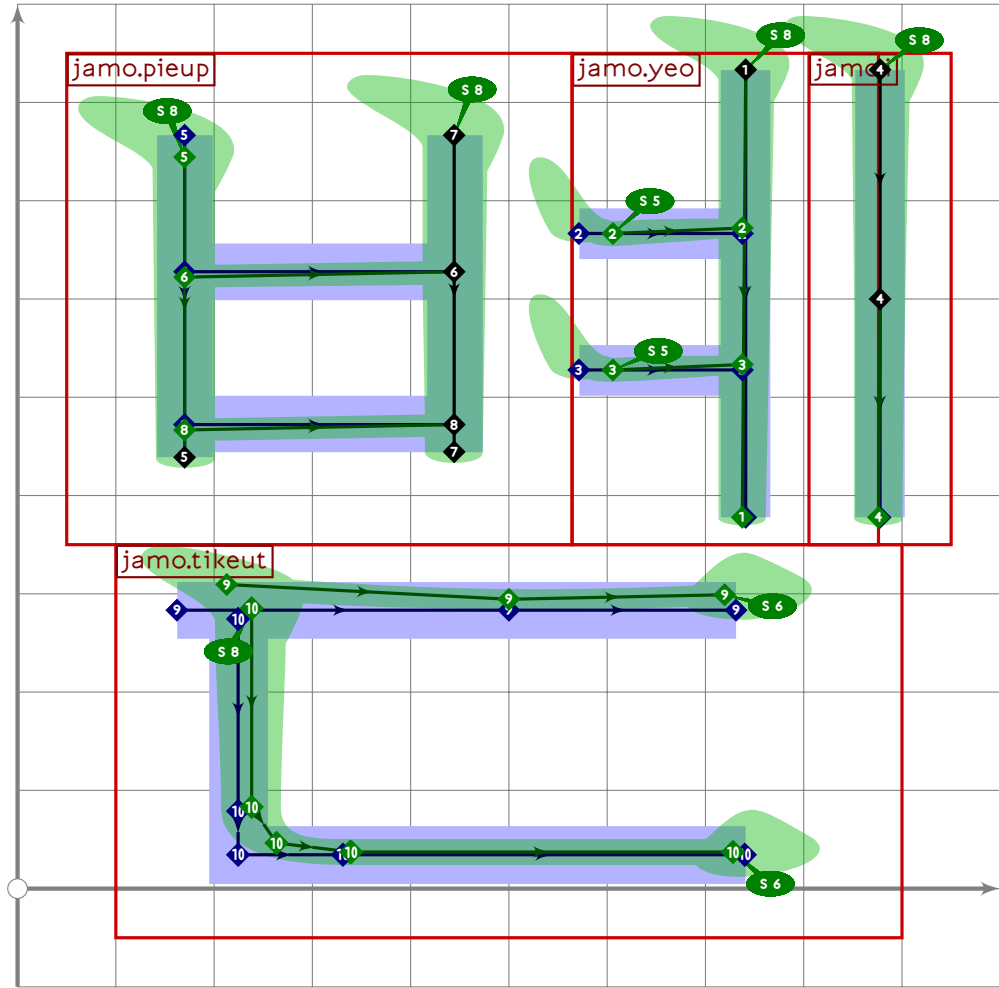


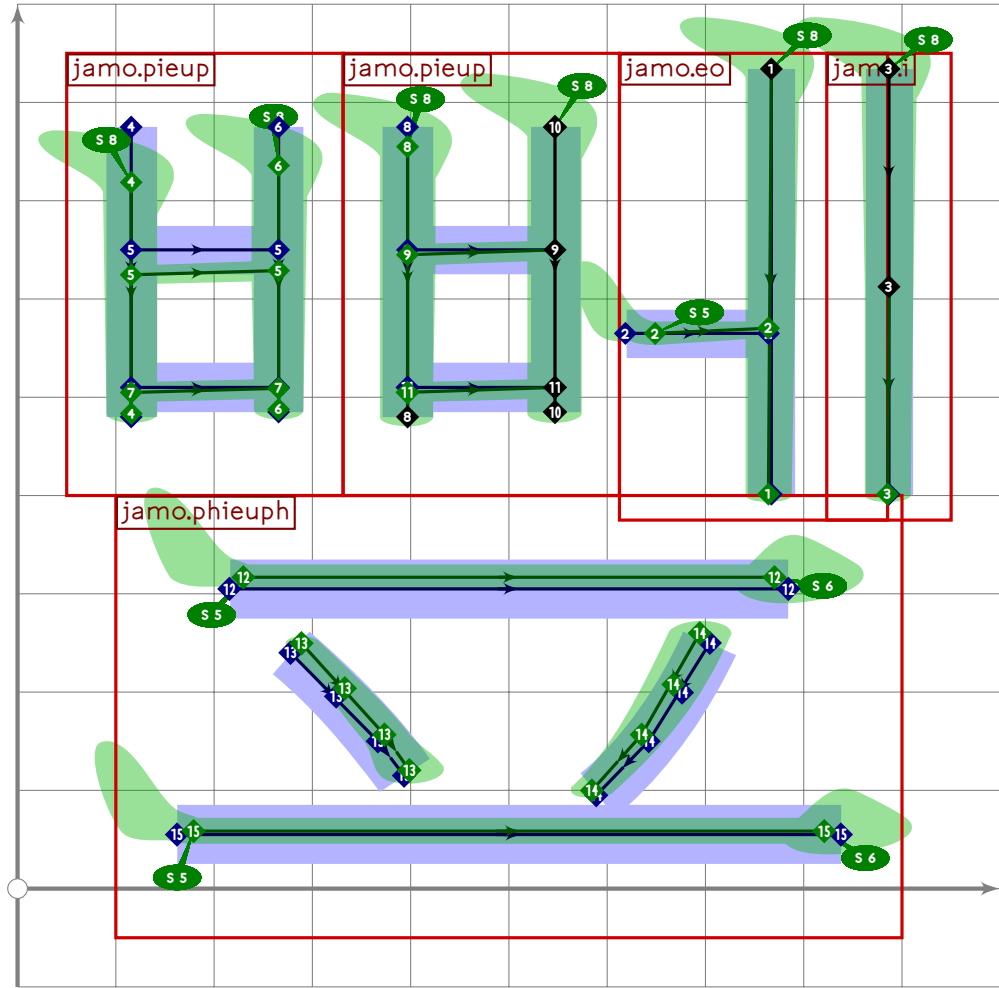


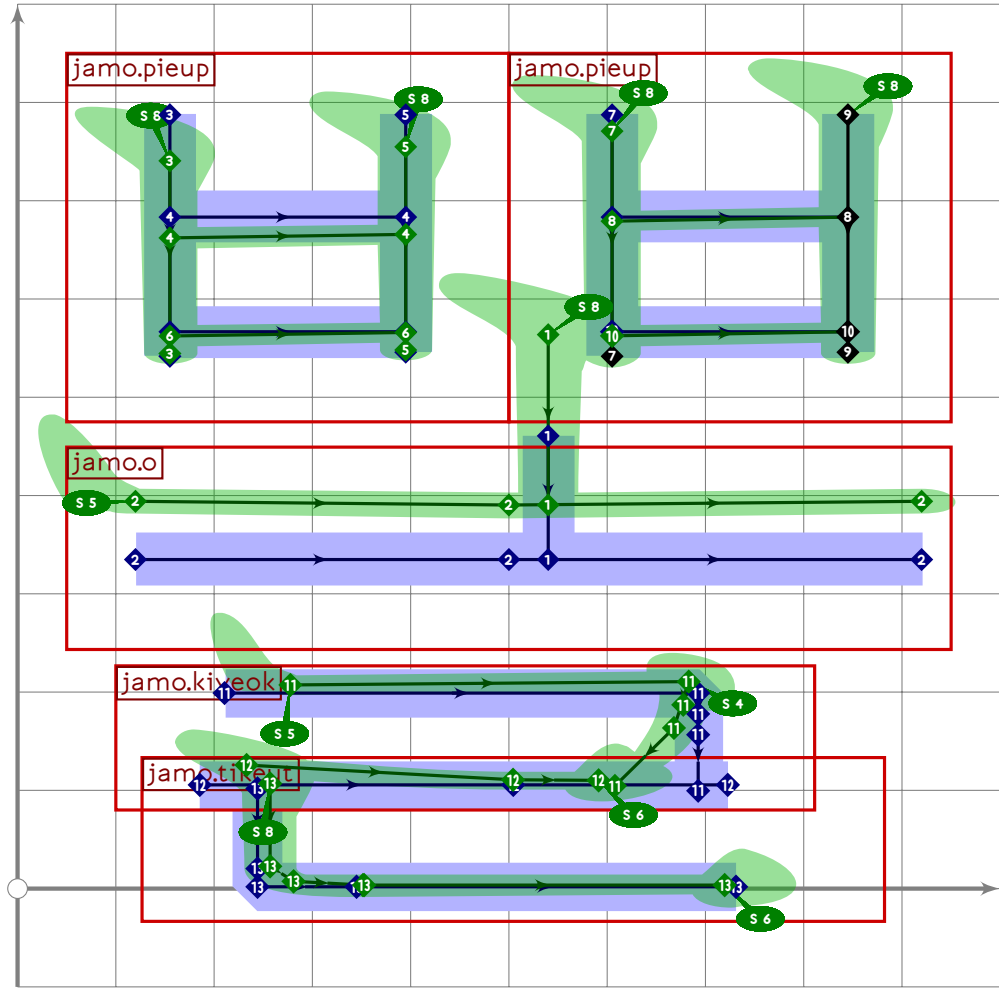


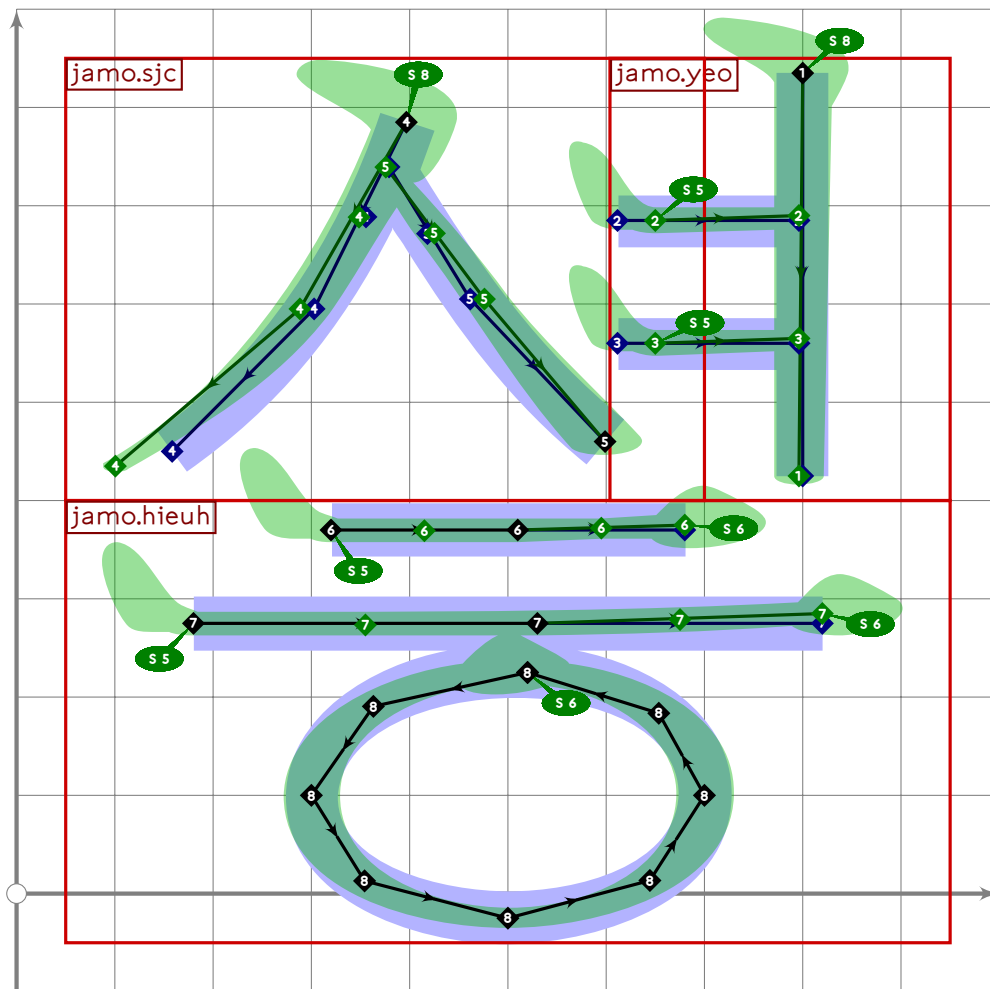


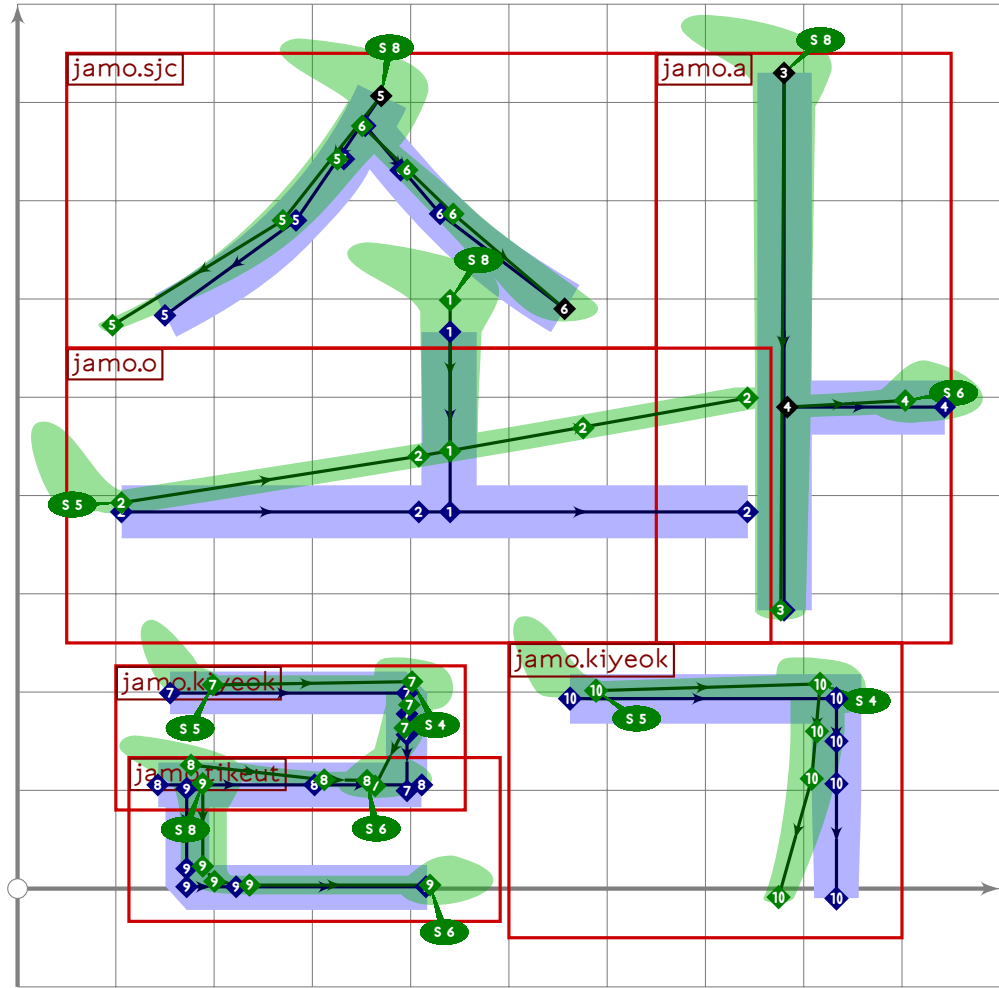


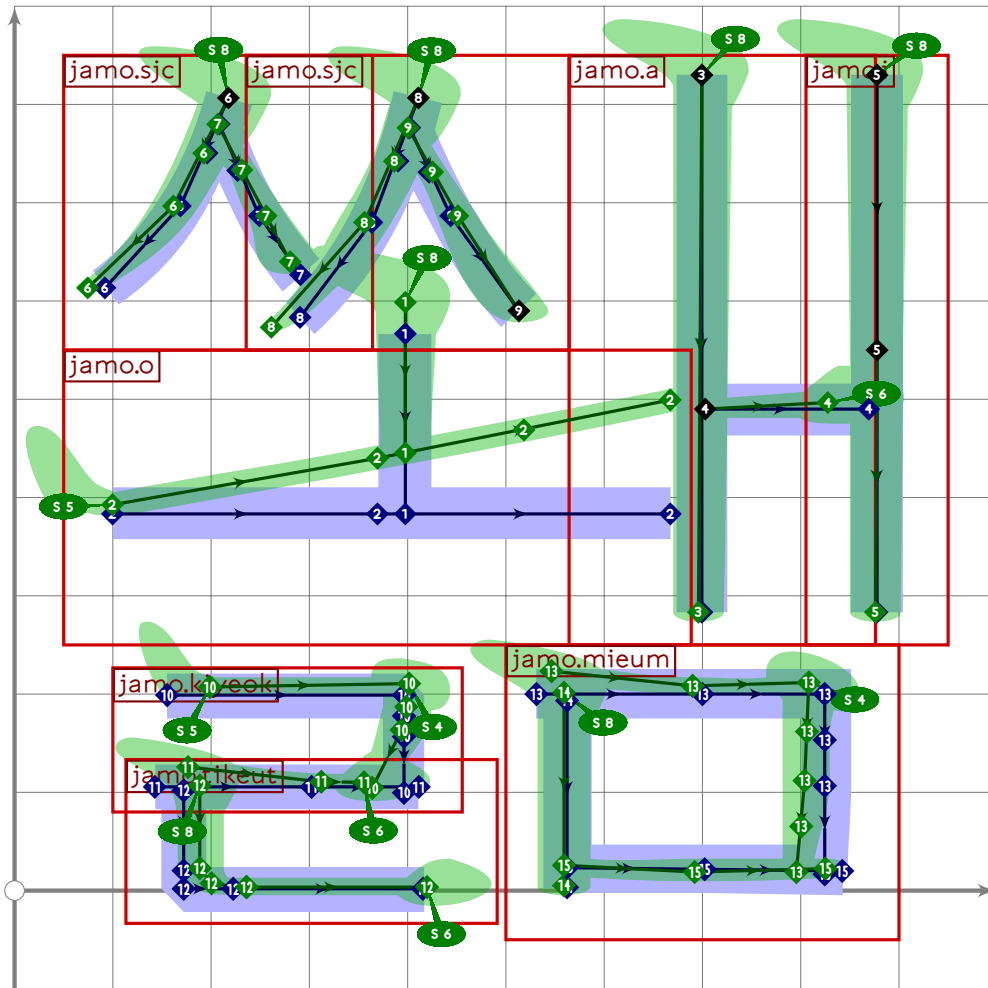


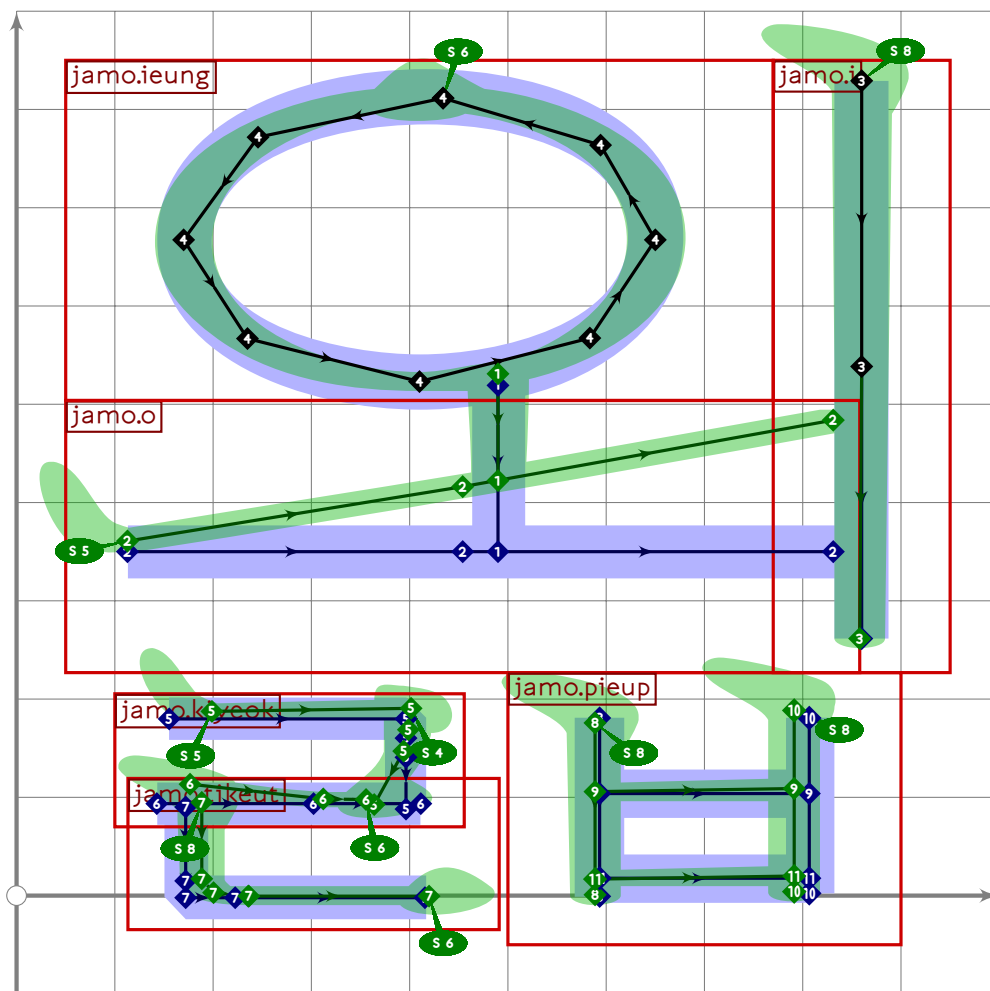


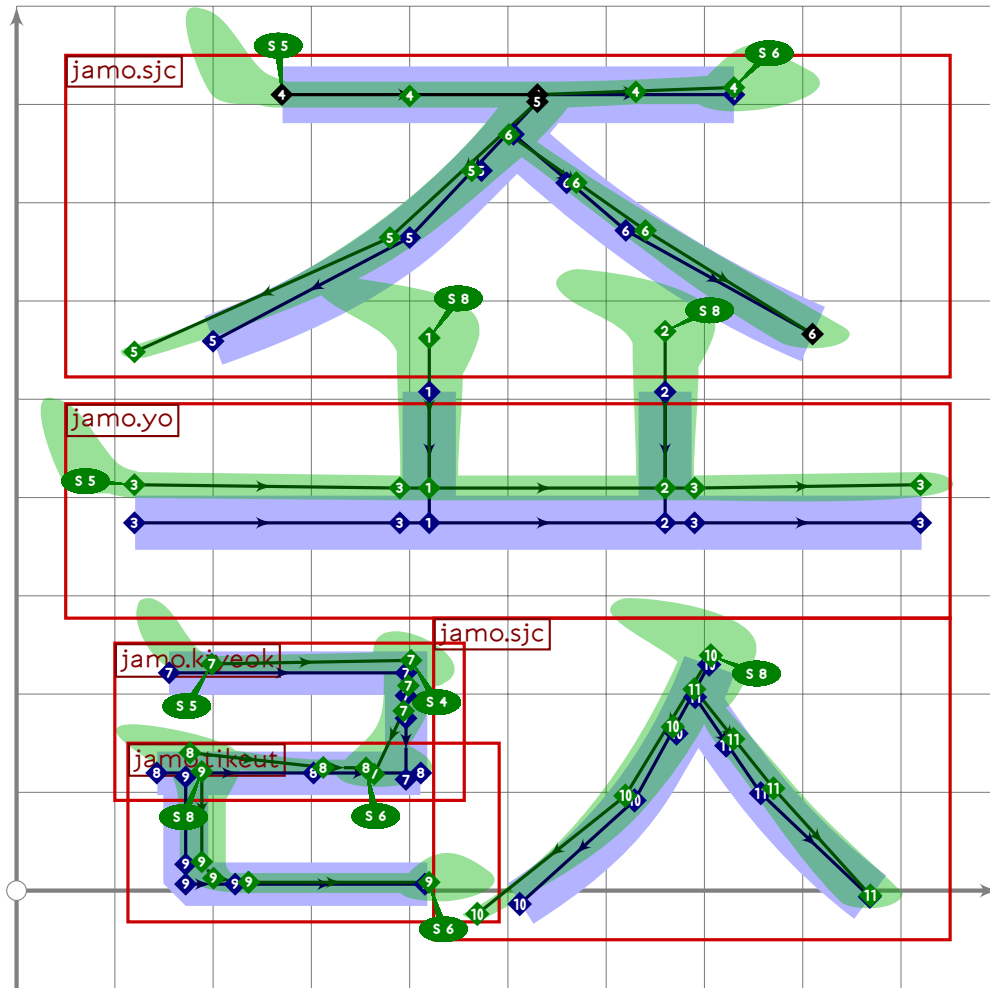


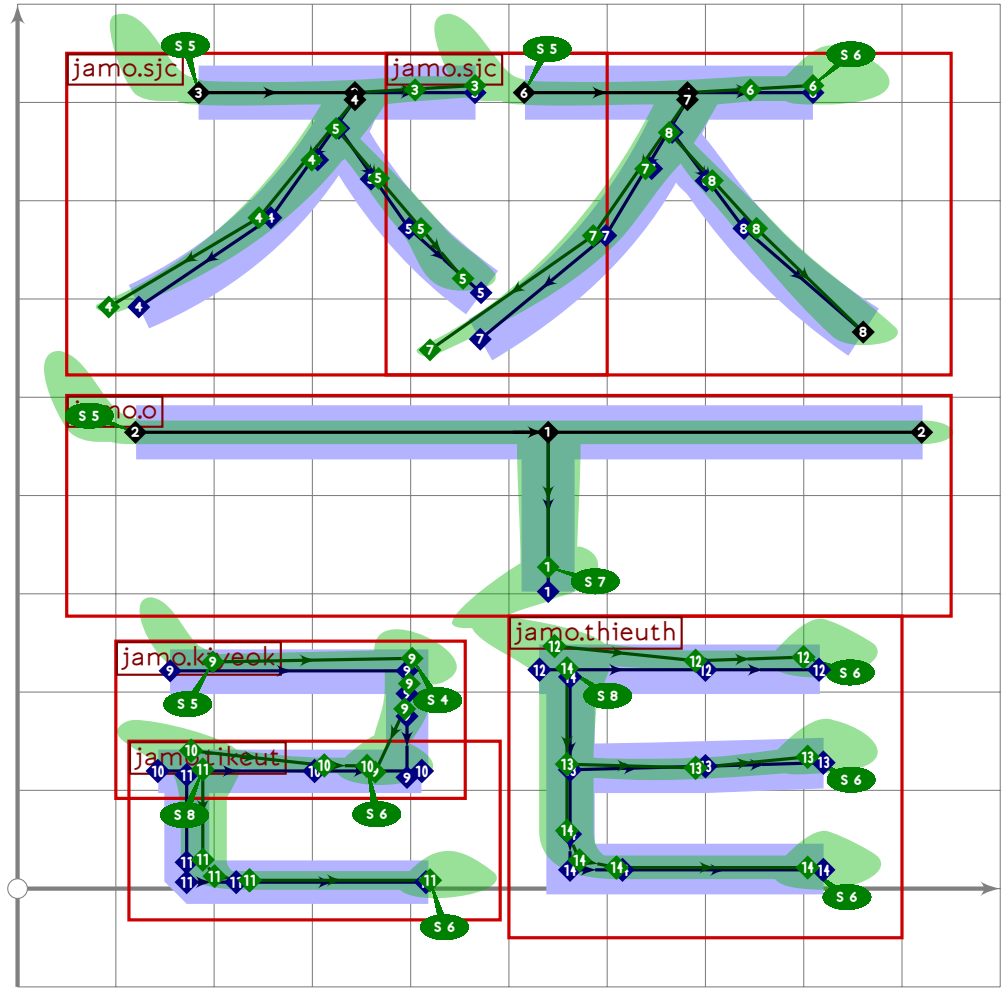


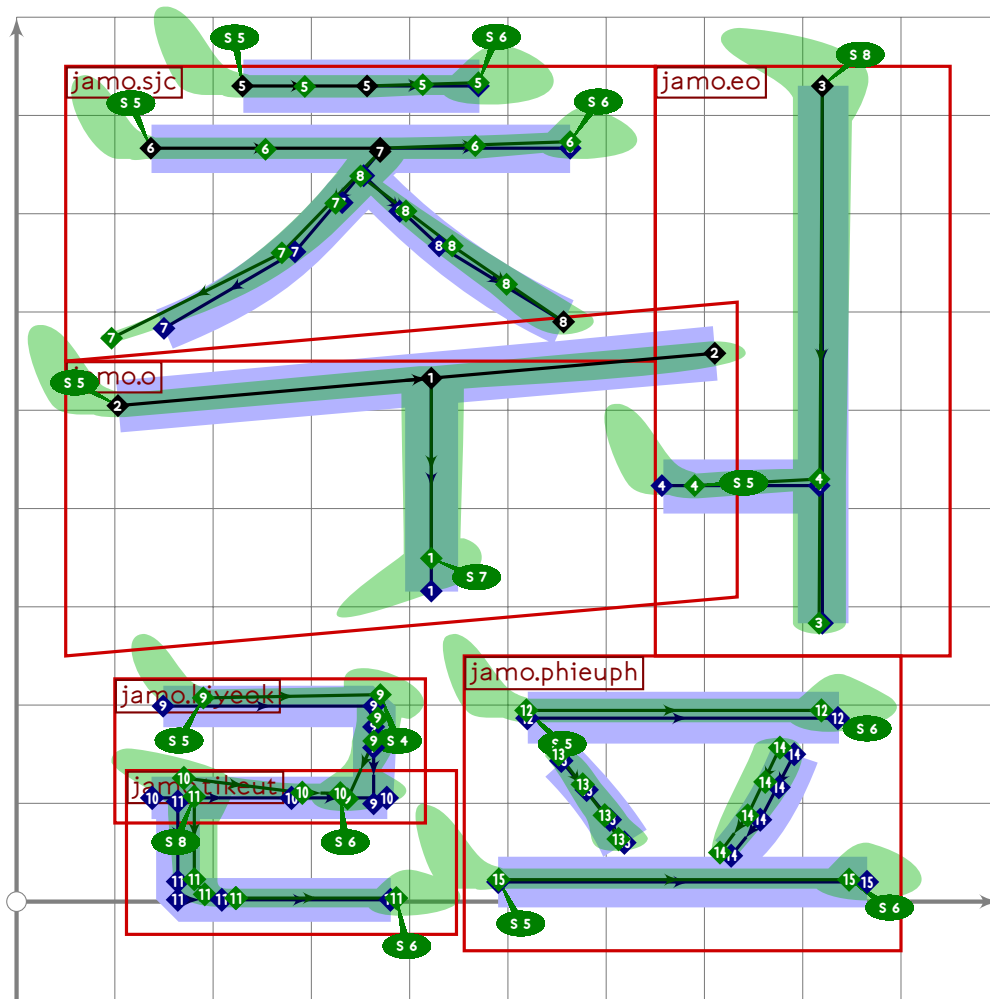


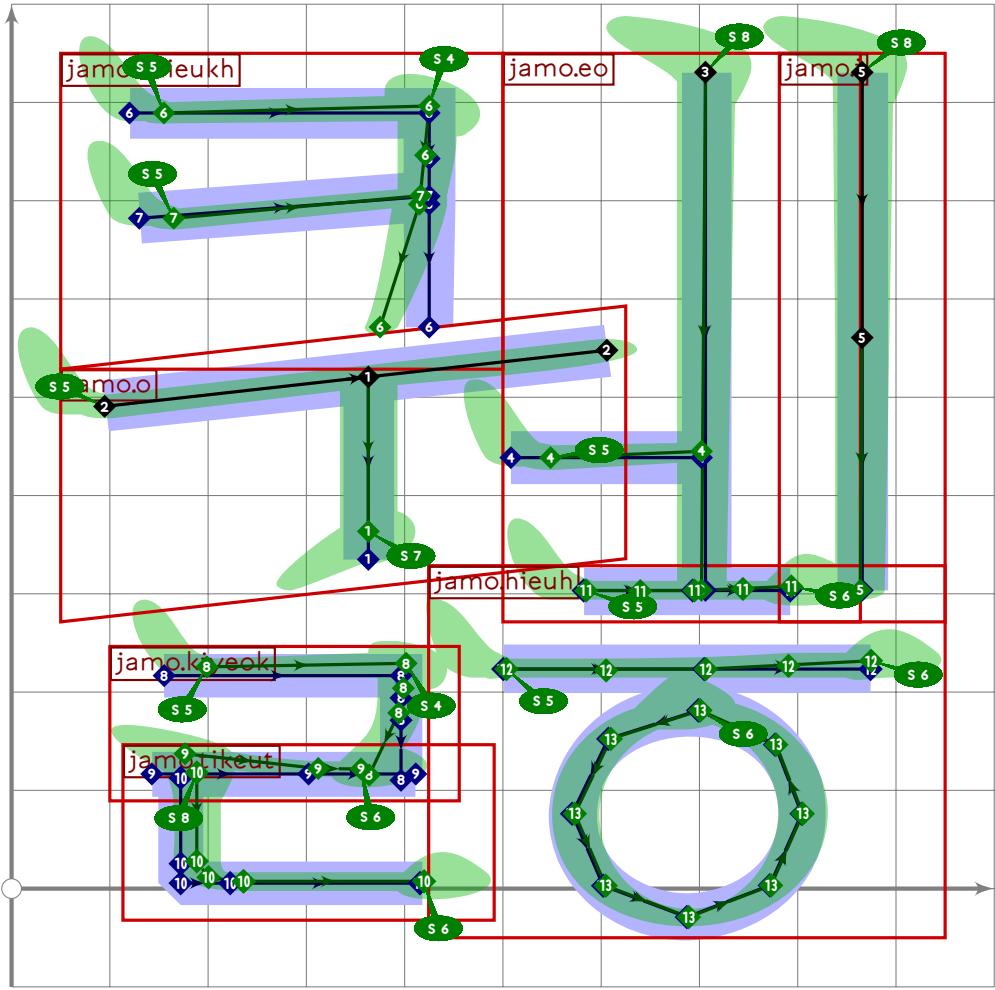


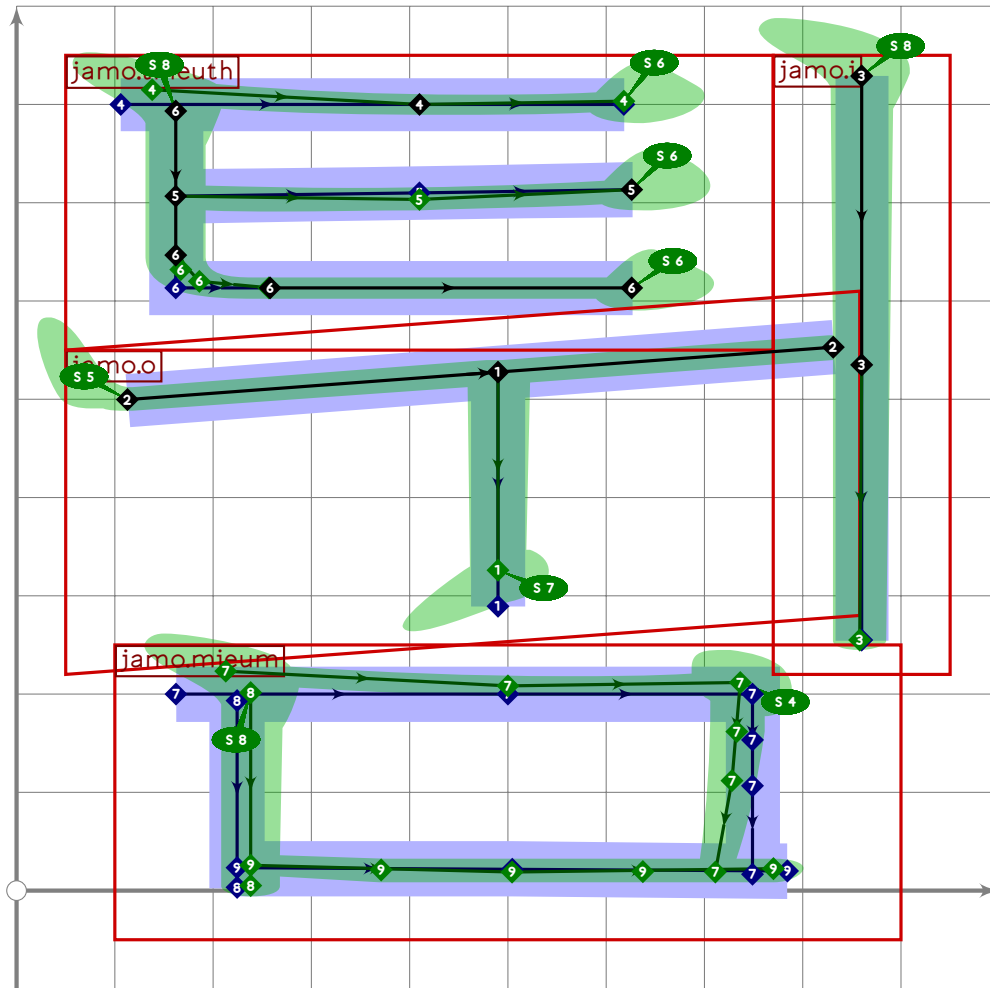


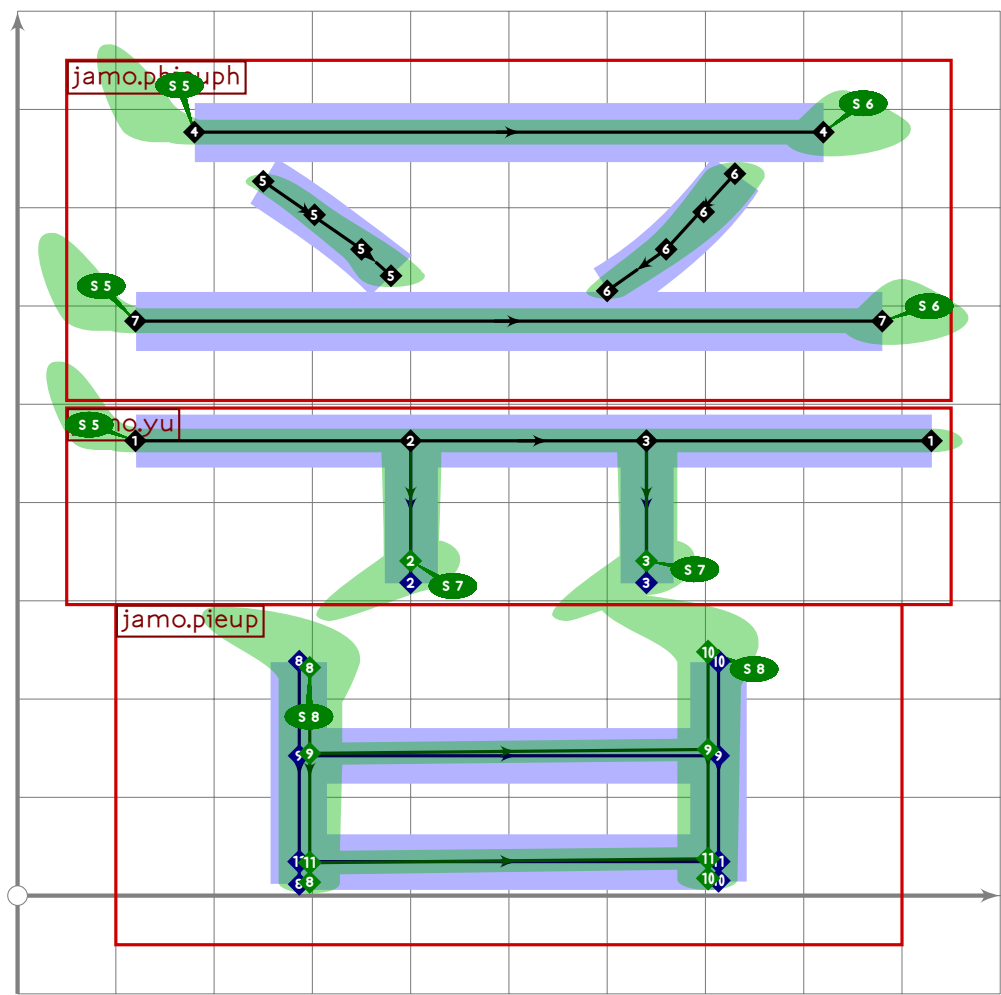


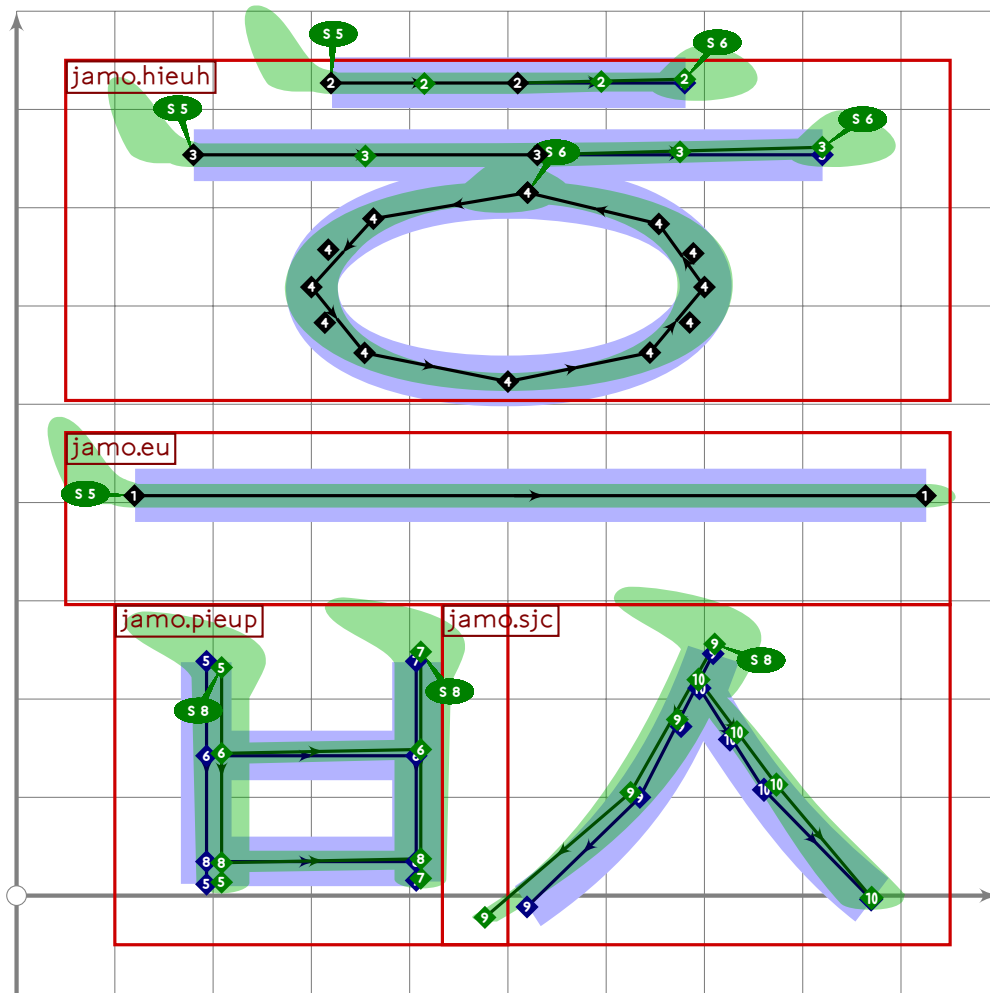












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AC00	가	각	각	각	간	간	간	간	갈	갈	갈	갈	갈	갈	갈	갈
AC10	감	갑	갑	갑	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
AC20	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
AC30	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
AC40	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
AC50	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
AC60	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
AC70	거	거	거	거	거	거	거	거	거	거	거	거	거	거	거	거
AC80	검	검	검	검	검	검	검	검	검	검	검	검	검	검	검	검
AC90	겐	겐	겐	겐	겐	겐	겐	겐	겐	겐	겐	겐	겐	겐	겐	겐
ACA0	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
ACB0	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
ACC0	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
ACD0	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇	갇
ACE0	고	고	고	고	고	고	고	고	고	고	고	고	고	고	고	고
ACF0	곰	곰	곰	곰	곰	곰	곰	곰	곰	곰	곰	곰	곰	곰	곰	곰
AD00	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD10	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD20	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD30	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD40	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD50	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD60	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD70	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD80	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
AD90	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
ADA0	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
ADB0	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
ADC0	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관
ADD0	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관	관

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ADE0	꺄	꺅	꺆	꺇	꺈	꺉	꺊	꺋	꺌	꺍	꺎	꺏	꺐	꺑	꺒	꺓
ADF0	꺔	꺕	꺖	꺗	꺘	꺙	꺚	꺛	꺜	꺝	꺞	꺟	꺠	꺡	꺢	꺣
AE00	꺥	꺦	꺧	꺨	꺩	꺪	꺫	꺬	꺭	꺮	꺯	꺰	꺱	꺲	꺳	꺴
AE10	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
AE20	꺥	꺦	꺧	꺨	꺩	꺪	꺫	꺬	꺭	꺮	꺯	꺰	꺱	꺲	꺳	꺴
AE30	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
AE40	꺥	꺦	꺧	꺨	꺩	꺪	꺫	꺬	꺭	꺮	꺯	꺰	꺱	꺲	꺳	꺴
AE50	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
AE60	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
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AE90	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
AEA0	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
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AF10	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
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AF30	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
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AF80	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
AF90	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
AFA0	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤
AFB0	꺵	꺶	꺷	꺸	꺹	꺺	꺻	꺼	꺽	꺾	꺿	꺠	꺡	꺢	꺣	꺤

AC

[illegible]

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B390	던	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B3A0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B3B0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B3C0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B3D0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B3E0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B3F0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B400	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B410	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B420	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B430	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B440	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B450	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B460	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B470	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B480	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B490	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B4A0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B4B0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B4C0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B4D0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B4E0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B4F0	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B500	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B510	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B520	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B530	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B540	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면
B550	년	면	면	면	면	면	면	면	면	면	면	면	면	면	면	면

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B560	때	태	태	태	태	태	태	태	태	태	태	태	태	태	태	태
B570	탈	탈	탈	탈	탈	탈	탈	탈	탈	탈	탈	탈	탈	탈	탈	탈
B580	딱	딱	딱	딱	딱	딱	딱	딱	딱	딱	딱	딱	딱	딱	딱	딱
B590	태	태	태	태	태	태	태	태	태	태	태	태	태	태	태	태
B5A0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B5B0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B5C0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B5D0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B5E0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B5F0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B600	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B610	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B620	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B630	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B640	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B650	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B660	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B670	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B680	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B690	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B6A0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B6B0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B6C0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B6D0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B6E0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B6F0	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B700	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B710	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B720	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠
B730	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠	떠

AC

AC

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
BCE0	벼	벼	벼	벼	벼	벼	벼	벼	벼	벼	벼	벼	벼	벼	벼	벼
BCF0	벵	벵	벵	벵	보	보	보	보	보	보	보	보	보	보	보	보
BD00	보	보	보	보	보	보	보	보	보	보	보	보	보	보	보	보
BD10	봐	봐	봐	봐	반	반	반	반	반	반	반	반	반	반	반	반
BD20	뵤	뵤	뵤	뵤	반	반	반	반	반	반	반	반	반	반	반	반
BD30	뵤	뵤	뵤	뵤	반	반	반	반	반	반	반	반	반	반	반	반
BD40	뵤	뵤	뵤	뵤	반	반	반	반	반	반	반	반	반	반	반	반
BD50	뵤	뵤	뵤	뵤	반	반	반	반	반	반	반	반	반	반	반	반
BD60	뵤	뵤	뵤	뵤	반	반	반	반	반	반	반	반	반	반	반	반
BD70	뵤	뵤	뵤	뵤	반	반	반	반	반	반	반	반	반	반	반	반
BD80	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BD90	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BDA0	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BDB0	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BDC0	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BDD0	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BDE0	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BDF0	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE00	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE10	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE20	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE30	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE40	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE50	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE60	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE70	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE80	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BE90	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BEA0	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부
BEBO	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부	부

AC

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
C0A0	뵤	뵤	뵤	뵤	뵤	뵤	뵤	뵤	뵤	뵤	뵤	뵤	뵤	사	삭	삭	삭
C0B0	산	산	산	산	산	산	산	산	산	산	산	산	산	삼	삼	삼	삼
C0C0	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	산	산	산	산
C0D0	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	산	산	산	산
C0E0	색	색	색	색	색	색	색	색	색	색	색	색	색	산	산	산	산
C0F0	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	샐	삭	삭	삭	삭
C100	새	새	새	새	새	새	새	새	새	새	새	새	새	새	새	새	새
C110	새	새	새	새	새	새	새	새	새	새	새	새	새	새	새	새	새
C120	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C130	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C140	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C150	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C160	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C170	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C180	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C190	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C1A0	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C1B0	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C1C0	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C1D0	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C1E0	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C1F0	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C200	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C210	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C220	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C230	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C240	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C250	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C260	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신
C270	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신	신

AC

[illegible]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C640	아	악	안	아	안	아	아	아	아	아	아	아	아	아	아	아
C650	엄	엄	엄	엄	엄	엄	엄	엄	엄	엄	엄	엄	엄	엄	엄	엄
C660	언	언	언	언	언	언	언	언	언	언	언	언	언	언	언	언
C670	엇	엇	엇	엇	엇	엇	엇	엇	엇	엇	엇	엇	엇	엇	엇	엇
C680	예	예	예	예	예	예	예	예	예	예	예	예	예	예	예	예
C690	에	에	에	에	에	에	에	에	에	에	에	에	에	에	에	에
C6A0	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया	ैया
C6B0	아	아	아	아	아	아	아	아	아	아	아	아	아	아	아	아
C6C0	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이
C6D0	위	위	위	위	위	위	위	위	위	위	위	위	위	위	위	위
C6E0	우	우	우	우	우	우	우	우	우	우	우	우	우	우	우	우
C6F0	을	을	을	을	을	을	을	을	을	을	을	을	을	을	을	을
C700	엔	엔	엔	엔	엔	엔	엔	엔	엔	엔	엔	엔	엔	엔	엔	엔
C710	어	어	어	어	어	어	어	어	어	어	어	어	어	어	어	어
C720	아	아	아	아	아	아	아	아	아	아	아	아	아	아	아	아
C730	나	나	나	나	나	나	나	나	나	나	나	나	나	나	나	나
C740	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이
C750	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이
C760	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이
C770	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이
C780	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이	이
C790	자	자	자	자	자	자	자	자	자	자	자	자	자	자	자	자
C7A0	잠	잠	잠	잠	잠	잠	잠	잠	잠	잠	잠	잠	잠	잠	잠	잠
C7B0	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재
C7C0	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재
C7D0	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재
C7E0	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재
C7F0	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재	재
C800	저	저	저	저	저	저	저	저	저	저	저	저	저	저	저	저
C810	점	점	점	점	점	점	점	점	점	점	점	점	점	점	점	점

AC

[illegible]

AC

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
D180	텍	텔	톈	텅	테	택	텍	텍	텐	텅	텐	텔	텍	텔	텅	텅
D190	테	테	테	테	테	테	테	테	테	테	테	테	테	테	테	테
D1A0	토	토	토	토	토	토	토	토	토	토	토	토	토	토	토	토
D1B0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D1C0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D1D0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D1E0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D1F0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D200	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D210	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D220	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D230	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D240	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D250	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D260	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D270	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D280	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D290	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D2A0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D2B0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D2C0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D2D0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D2E0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D2F0	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D300	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D310	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D320	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D330	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D340	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼
D350	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼	툼

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D360	파	팩	팍	팍	판	판	판	판	팔	팍	팍	팍	팍	팍	팍	팍
D370	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍
D380	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D390	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D3A0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D3B0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D3C0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D3D0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D3E0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D3F0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D400	파	팍	팍	팍	판	판	판	판	팔	팍	팍	팍	팍	팍	팍	팍
D410	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍	팍
D420	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D430	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D440	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D450	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D460	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D470	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D480	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D490	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D4A0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D4B0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D4C0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D4D0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D4E0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D4F0	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D500	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D510	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D520	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀
D530	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀	핀

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D540	핀	피	프	폰	폴	포	프	포	피	프	프	프	프	프	프	프
D550	피	피	피	피	피	피	피	피	하	하	하	하	하	하	하	하
D560	합	합	합	합	합	합	합	합	합	합	합	합	합	합	합	합
D570	학	학	학	학	학	학	학	학	학	학	학	학	학	학	학	학
D580	행	행	행	행	행	행	행	행	행	행	행	행	행	행	행	행
D590	야	야	야	야	야	야	야	야	야	야	야	야	야	야	야	야
D5A0	함	함	함	함	함	함	함	함	함	함	함	함	함	함	함	함
D5B0	해	해	해	해	해	해	해	해	해	해	해	해	해	해	해	해
D5C0	햇	햇	햇	햇	햇	햇	햇	햇	어	어	어	어	어	어	어	어
D5D0	헐	헐	헐	헐	헐	헐	헐	헐	헐	헐	헐	헐	헐	헐	헐	헐
D5E0	헉	헉	헉	헉	헉	헉	헉	헉	헉	헉	헉	헉	헉	헉	헉	헉
D5F0	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛
D600	여	여	여	여	여	여	여	여	여	여	여	여	여	여	여	여
D610	염	염	염	염	염	염	염	염	염	염	염	염	염	염	염	염
D620	혜	혜	혜	혜	혜	혜	혜	혜	혜	혜	혜	혜	혜	혜	혜	혜
D630	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛	헛
D640	호	호	호	호	호	호	호	호	호	호	호	호	호	호	호	호
D650	호	호	호	호	호	호	호	호	호	호	호	호	호	호	호	호
D660	화	화	화	화	화	화	화	화	화	화	화	화	화	화	화	화
D670	화	화	화	화	화	화	화	화	화	화	화	화	화	화	화	화
D680	화	화	화	화	화	화	화	화	화	화	화	화	화	화	화	화
D690	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회
D6A0	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회
D6B0	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회
D6C0	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회
D6D0	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회	회
D6E0	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘
D6F0	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘	휘
D700	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨
D710	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨	웨

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D720	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후
D730	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후
D740	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후
D750	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후
D760	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후
D770	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후
D780	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후
D790	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후	후
D7A0	후	후	후	후												