

Flux: Making Fonts Smarter

Simon Cozens

What is a font?

```
bash-3.2$ ttx -l Lato-Regular.ttf
Listing table info for "Lato-Regular.ttf":
```

tag	checksum	length	offset
----	-----	-----	-----
head	0x09382E92	54	268
hhea	0x0DF10CBA	36	324
maxp	0x0D960D6A	32	360
OS/2	0x6A11E78F	96	392
hmtx	0x90C51A25	12092	488
cmap	0x50AAD9FA	5286	12580
fpgm	0xE414DBF0	2967	17868
prep	0x6F0A693A	185	20836
cvt	0x3A28B390	230	21024
loca	0x2B081FDE	12096	21256
glyf	0x42649D8E	397998	33352
name	0xD9B80BC3	5946	431352
post	0xFE310059	32	437300
gasp	0x00000010	8	437332
GPOS	0x146C193F	210546	437340
GSUB	0x6CA8D078	9324	647888

Metadata

Metrics

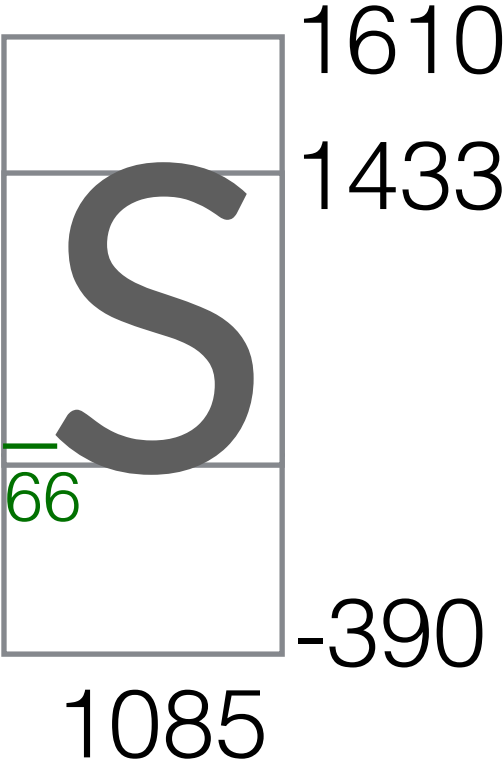
Initial codepoint to
glyph mapping

Hinting information

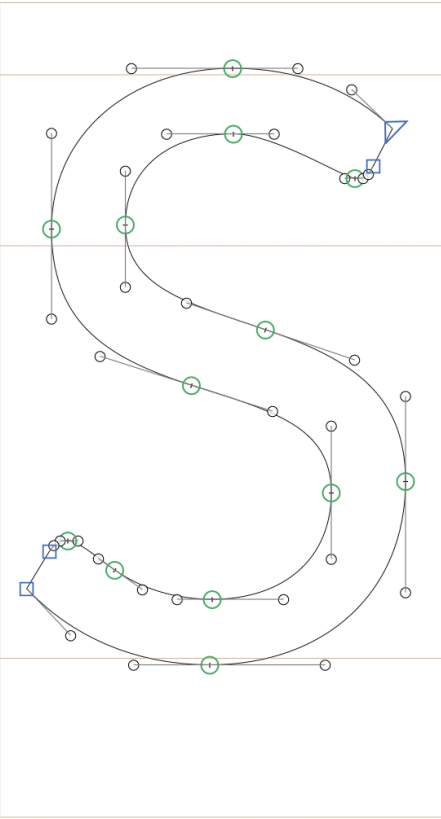
The actual outlines!

More metadata

Ooh, what's this?



U+0053 => GID 34 (S)



OpenType Substitution and Positioning

(Latin script edition)

office

```
feature liga { sub f f i by f_f_i } liga;
```

office

NAVAL

```
feature kern { pos A V -80; pos V A -80; } kern;
```

NAVAL

OpenType Substitution and Positioning

(All other scripts edition)

With OpenType Features:

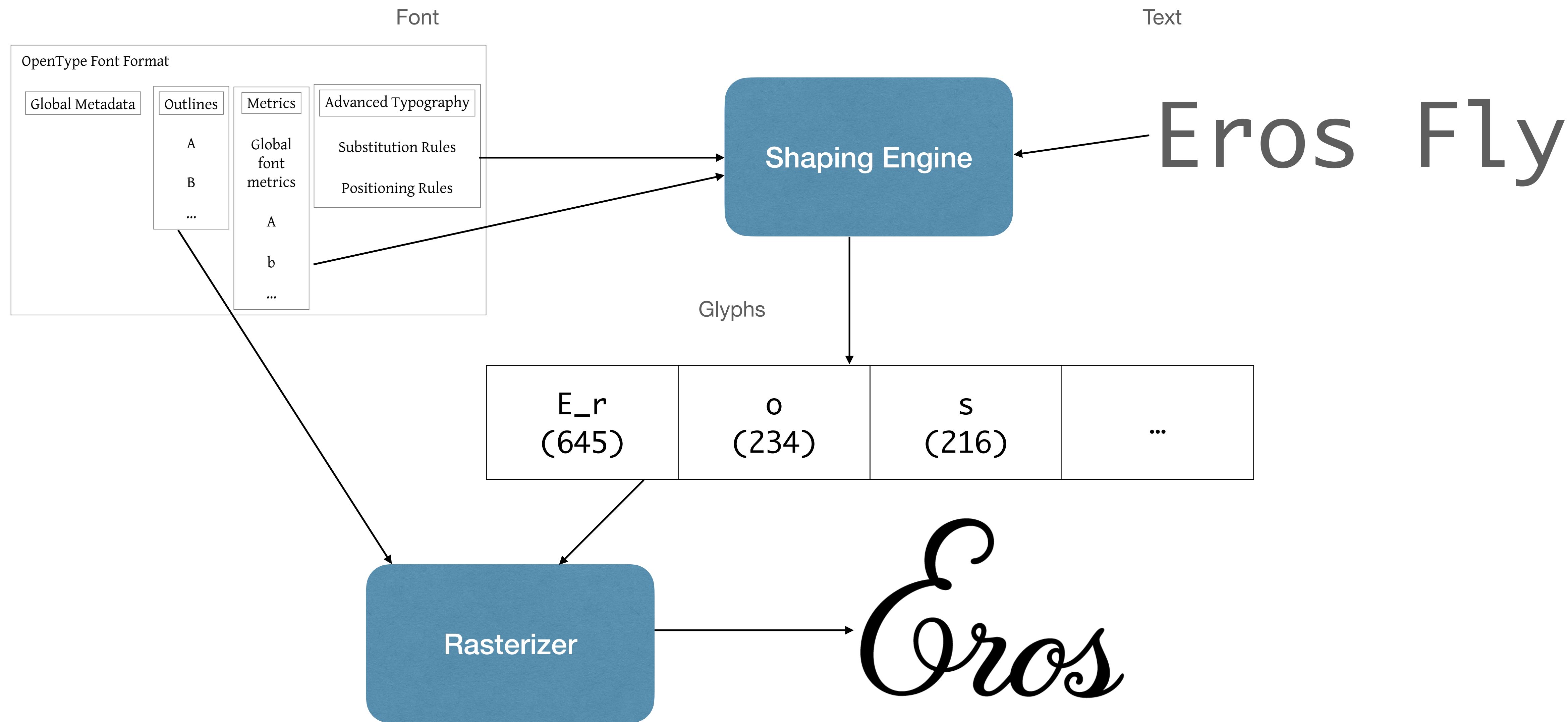
بھینس

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Without OpenType Features:

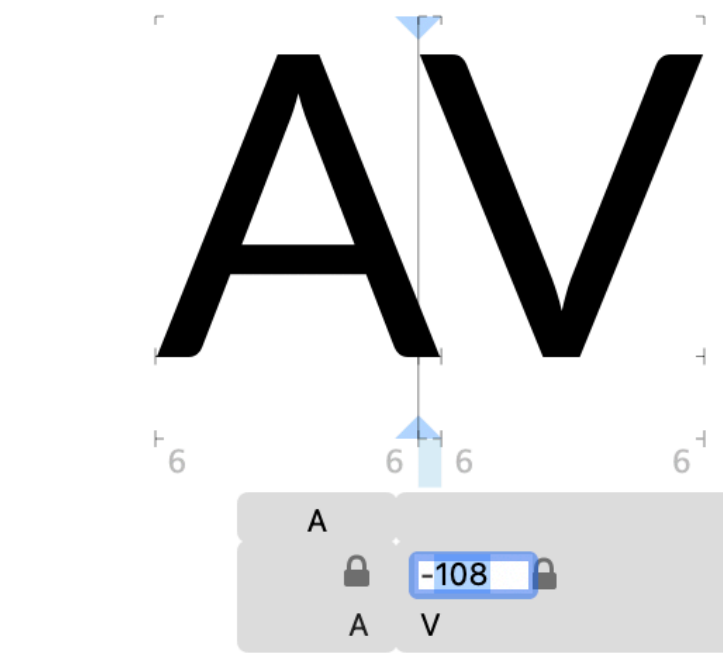
بھینس

How OpenType Works In One Slide

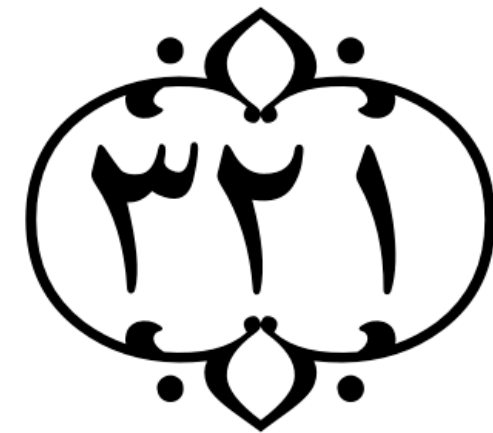
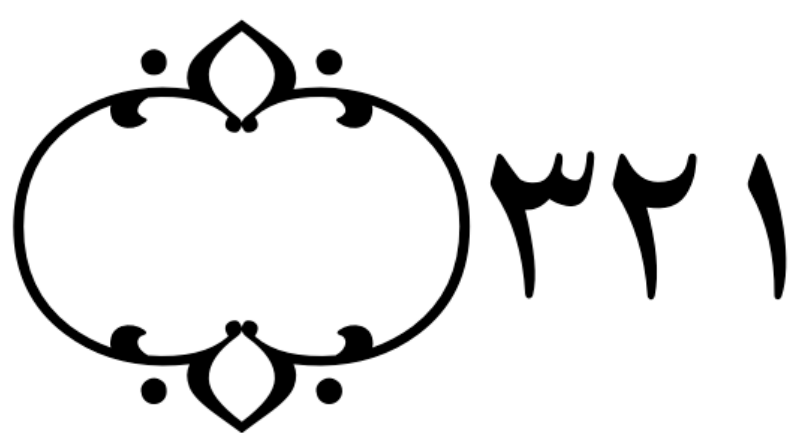


Editing OpenType Rules

- Kerning: in font editor
- Some substitutions: done by magic
- Everything else: You're on your own



```
feature kern {  
  pos @EndOfAyah @Digits.small' <-1079 0 -292 0> @Digits.small' <-786 0 -292 0> @Digits.small' <-493 0 -292 0>;  
  pos @EndOfAyah @Digits.small' <-933 0 -292 0> @Digits.small' <-640 0 -292 0>;  
  pos @EndOfAyah @Digits.small' <-786 0 -292 0>;  
}
```



Variable fonts...

...need variable layout



Flux - Hind.fluxml

Name	Contents
COMBINI...	dvmU dvmUU dvmvR dvmvL dvmvLL dvmE dvmAl dvmEcandra dvAnusvara d...
ml_BASES	dvKA dvPHA dvKxA dvPHxA dvK_RA dvPH_RA dvKx_RA dvPHx_RA dvK_KA ...
ml_ALTS	dvml.a01 dvml.a02 dvml.a03 dvml.a04 dvml.a05 dvml.a06 dvml.a07 dvml.a08 ...
ml_BASES	dvKA dvKHA dvGA dvGHA dvNGA dvCA dvCHA dvJA dvJHA dvNYA dvTTA d...

Lookups

rkrf_dev2

sub dvKA dvVirama dvRA by dvK_RA;
sub dvKHA dvVirama dvRA by dvKH_RA;
sub dvGA dvVirama dvRA by dvG_RA;
sub dvGHA dvVirama dvRA by dvGH_RA;
sub dvNGA dvVirama dvRA by dvNG_RA;
sub dvCA dvVirama dvRA by dvC_RA;
sub dvCHA dvVirama dvRA by dvCH_RA;
sub dvJA dvVirama dvRA by dvJ_RA;
sub dvJHA dvVirama dvRA by dvJH_RA;
sub dvNYA dvVirama dvRA by dvNY_RA;
sub dvTTA dvVirama dvRA by dvTT_RA;
sub dvTTHA dvVirama dvRA by dvTTH_RA;
sub dvDDA dvVirama dvRA by dvDD_RA;

Features

> nukta *Nukta Forms*

> akhn *Akhands*

> rphf *Reph Forms*

> rkrf *Rakar Forms*

> blwf *Below-base Forms*

> half *Half Forms*

> vatu *Vattu Variants*

> pres *Pre-base Substitutions*

> abvs *Above-base Substitutions*

> blws *Below-base Substitutions*

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Features

nukt akhn rphf rkrf blwf half vatu pres abvs blws pstst haln

liga

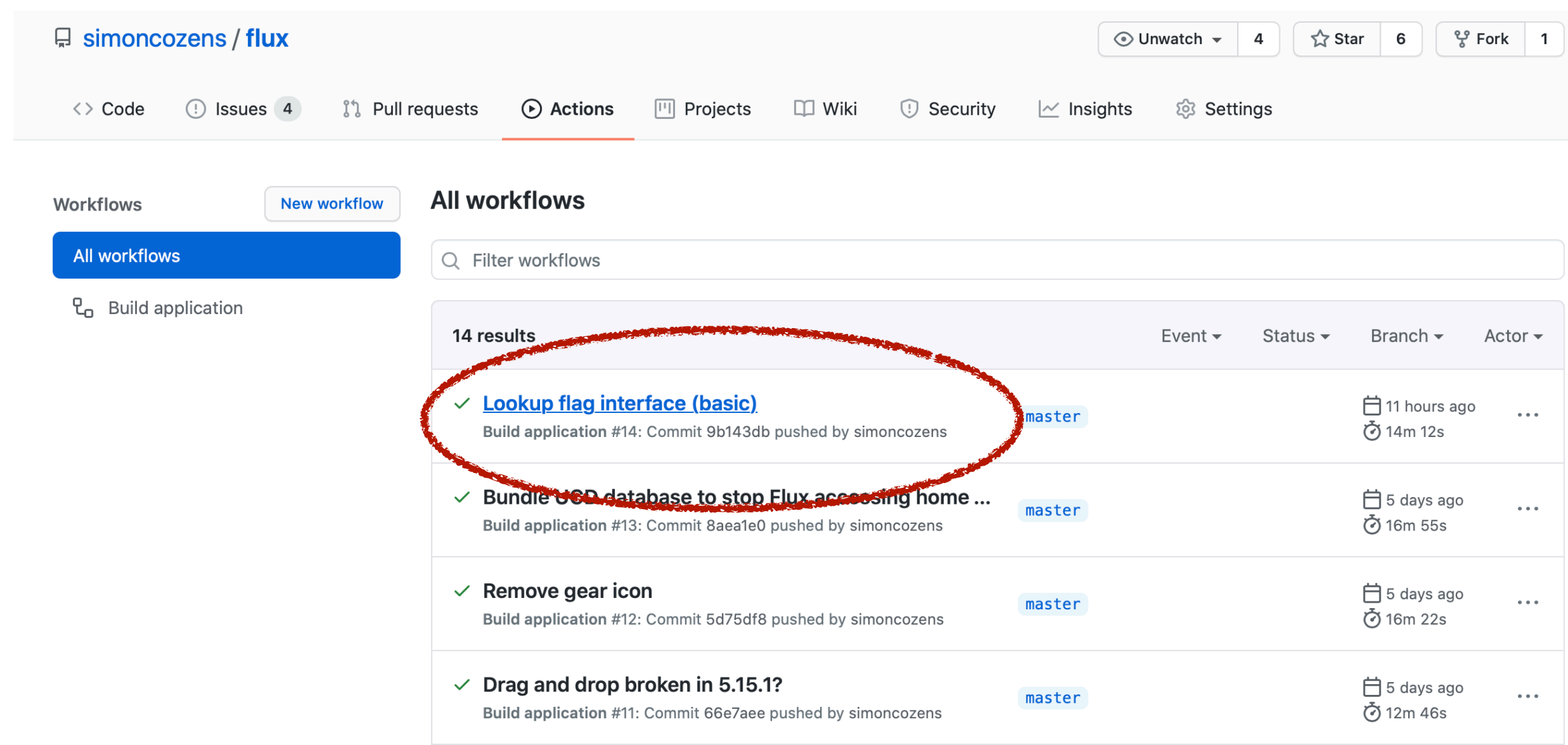
dvK_KA=0+1261

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message	buffer
After unnamed_routine_1 (nukt)	dvKA=0+761 dvVirama=0+0 ...
Processing features: akhn	
Processing features: rphf	
After unnamed_routine_6 (rphf)	
Processing features: rkrf	
Processing features: pref	
Processing features: blwf	
Processing features: abvf	
Processing features: half	
Routines executed but had no effect: unnamed_routine_2 ...	
After half_shared (half)	dvK=0+512 dvKA=0+761
Processing features: pstf	

How you can help

- Get the latest version! <https://github.com/simoncozens/flux>
OS X builds under “Actions” -> (latest version) -> “Artifacts”



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Unwatch 4 Star 6 Fork 1

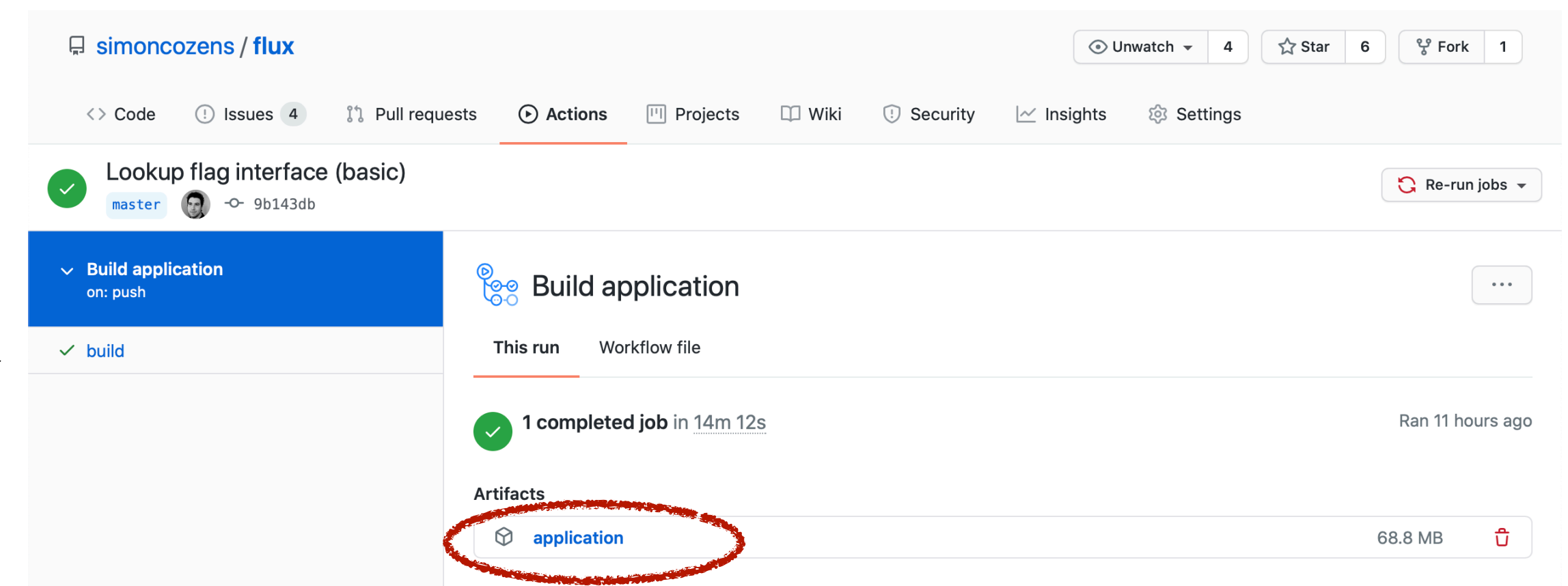
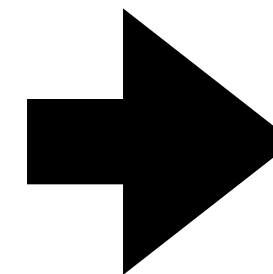
Code Issues 4 Pull requests Actions Projects Wiki Security Insights Settings

Workflows **All workflows** New workflow

Filter workflows

14 results

Event	Status	Branch	Actor
✓ Lookup flag interface (basic) Build application #14: Commit 9b143db pushed by simoncozens	✓	master	11 hours ago 14m 12s
✓ Bundle USD database to stop Flux accessing home ... Build application #13: Commit 8aea1e0 pushed by simoncozens	✓	master	5 days ago 16m 55s
✓ Remove gear icon Build application #12: Commit 5d75df8 pushed by simoncozens	✓	master	5 days ago 16m 22s
✓ Drag and drop broken in 5.15.1? Build application #11: Commit 66e7aee pushed by simoncozens	✓	master	5 days ago 12m 46s



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Unwatch 4 Star 6 Fork 1

Code Issues 4 Pull requests Actions Projects Wiki Security Insights Settings

Lookup flag interface (basic) master 9b143db Re-run jobs

Build application on: push

✓ build

Build application

This run Workflow file

1 completed job in 14m 12s Ran 11 hours ago

Artifacts

application 68.8 MB

How you can help

- Get the latest version! <https://github.com/simoncozens/flux>
- File lots of issues!
 - Really, anything!

Vielen Dank für Ihre Aufmerksamkeit! Thank you for watching!

And a very big thank you to Google Fonts for supporting the development of Flux!
Und ein Großes Dankeschön an Google Fonts für die Unterstützung der Entwicklung dieses Projekts!

