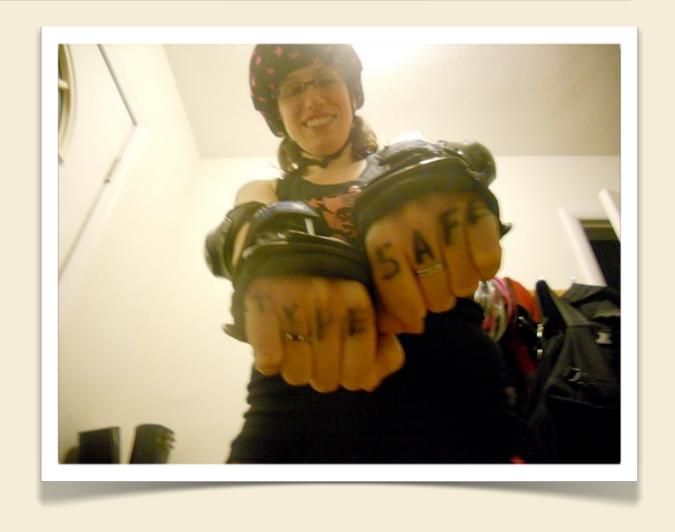


extension, overriding, and self

Lindsey Kuper Mozilla Research August 18, 2011



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- Ph.D. student at Indiana studying PL since fall 2008
 - and then I saw a job posting for Rust...



What's Rust?

a systems language pursuing the trifecta: safe, concurrent, fast

 I was intrigued by the idea of a classless object model and flexible prototype-style objects

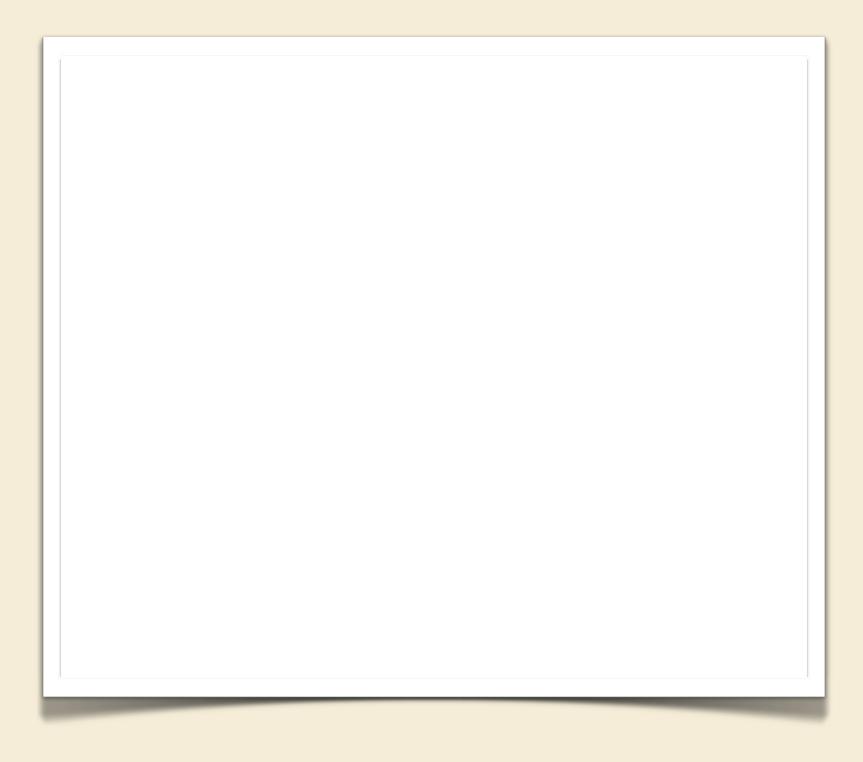
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 - No object extension, method overriding, or self-dispatch
- During my internship, I implemented those things
 - and learned that they interact with each other in interesting ways

Self-dispatch



Self-dispatch

```
obj cat() {
    fn ack() -> str {
       ret "ack";
    fn meow() -> str {
       ret "meow";
    fn zzz() -> str {
        ret self.meow();
let shortcat = cat();
assert (shortcat.zzz() == "meow");
```

Self-dispatch + object extension

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Self-dispatch + object extension

```
obj cat() {
                               let longcat = obj() {
    fn ack() -> str {
                                   fn lol() -> str {
        ret "ack";
                                      ret "lol":
    fn meow() -> str {
                                   fn nyan() -> str {
        ret "meow";
                                      ret "nyan";
    fn zzz() -> str {
                                   with shortcat
        ret self.meow();
                               };
                               assert (longcat.zzz() == "meow");
let shortcat = cat();
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A brainteaser...

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        ret self.meow();
                               };
                               assert (longcat.zzz() == "meow");
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```

On my first attempt, this returned "101".

Why?

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assert (longcat.zzz() == "meow");
```

-	longcat's vtable		
W	0	ack	forward to shortcat.ack()
	1	lol	ret "lol"
	2	meow	<pre>forward to shortcat.meow()</pre>
			ret "nyan"
	4	ZZZ	forward to shortcat.zzz()

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ack
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ret self.meow()

ZZZ

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     fn zzz() -> str {
                                     with shortcat
         ret self.meow():
  shortcat's backwarding vtable
                                 assert (longcat.zzz() == "meow");
ack
      backward to longcat.ack()
meow
      backward to longcat.meow()
                                              longcat's vtable
ZZZ
      backward to longcat.zzz()
                                      ack
                                            forward to shortcat.ack()
      shortcat's vtable
                                      lol
                                            ret "lol"
ack
      ret "ack"
                                      meow
                                            forward to shortcat.meow()
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meow
                                      nyan
                                            ret "nyan"
                                    4
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                                          longercat's vtable
                                    ack
                                          forward to shortcat.ack()
```

meow

ZZZ

ret "zzz"

forward to shortcat.zzz()

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assert (shortcat.zz:
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                                      ret "zzz";
    fn meow() -> str {
                                  with shortcat
        ret "meow":
                              };
    fn zzz() -> str {
                              assert (longercat.zzz() == "zzz");
        ret self.meow();
                      let evenlongercat = obj() {
let shortcat = cat(
                          fn meow() -> str {
                              ret "zzzzzzz";
assert (shortcat.zz:
                          with longercat
                      };
                      assert (evenlongercat.zzz() == "zzzzzz");
```

Go check it out!

http://rust-lang.org

Life goal achieved!



@shaver @lindsey @pcwalton as near as i can tell all the best people are at Mozilla, measuring "bestness" by "good at twitter" at least!

15 Aug via web

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Thanks to:

Graydon Hoare and everyone on the Rust team Dave Herman and all of Mozilla Research

Me: lkuper@cs.indiana.edu; @lindsey

Rust: http://rust-lang.org

